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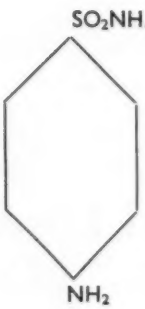

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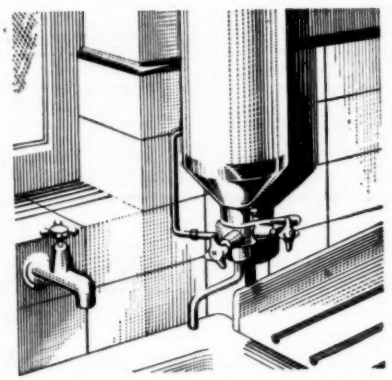

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ADDRESSES AND ORIGINAL ARTICLES

BACTERIAL INFECTION DURING INTRACRANIAL OPERATIONS*

By Hugh Cairns, D.M. Oxfd, B.S. Adelaide, F.R.C.S.

NUFFIELD PROFESSOR OF SURGERY IN THE UNIVERSITY OF OXFORD; CONSULTING SURGEON TO THE LONDON HOSPITAL

(*From the Radcliffe Infirmary, Oxford*)

After major intracranial operations a not inconsiderable number of patients die from bacterial infection. The bacteria gain a foothold in a variety of ways and from various sources. Much is already known about operative infection from the work of bacteriologists and surgeons; but there does not exist, so far as I am aware, a comprehensive survey of the dangers of infection during an intracranial operation. The importance of the subject may be judged from the mortality figures of operations for intracranial tumours and allied conditions in my clinic from 1927 to 1938 (table I). Table II gives an analysis of the figures of one year in greater detail. In this particular year, it will be seen, 25 per cent. of the operative fatalities were due to operative infection.

SCALP INFECTION

Scalp infection after an intracranial operation is not necessarily serious; but, when a brain tumour must be removed in stages at short intervals, the slightest unhealthiness of the wound, when it comes to be reopened at the second operation, may give rise to fatal meningitis. In my experience operative infection of the previously healthy and surgically cleaned scalp only occurs when the blood-supply of the wound edges is impaired; as in infections in some other parts of the body, notably in the urinary bladder (Cairns 1925), accessory factors are in most cases of greater importance than the bacterial infection.

Suture of the galea aponeurotica by interrupted stitches of fine silk, introduced many years ago by Cushing, did away with the need for tight skin stitches. The next step was a broadening of the pedicle of the skin flap, which came from recognition of the fact that it is not necessary in osteoplastic craniotomy to preserve the attachment of the bone flap to the overlying scalp. The old frontal flaps (fig. 1*a*) occasionally showed necrosis of the skin at the anteromedial angle, even in the hands of the most expert surgeons; the new type of frontal flap (fig. 1*b*), introduced by Souttar (1928), gave more uniformly good skin healing. In this type of operation the bone of the flap usually lives, since its blood-supply comes more from the temporal muscle and fascia, to which it is still attached, than from the overlying scalp. But even when deprived of all blood-supply the bone may still be replaced without in any way disturbing the healing of the wound.

In July, 1933, I removed a right frontoparietal meningioma from a woman aged 59. As shown in fig. 2, there was an internal hyperostosis of the skull corresponding in extent to the surface of the intracranial tumour, and this hyperostosis contained nests of tumour cells. To have removed this hyperostosis without sacrificing the whole of the bone flap would have been difficult and would have resulted in a large bony defect. The bone flap was accordingly removed, was boiled for three minutes in the steriliser, and was then replaced in the wound, where, owing to its bevelled edges, it lay snugly without any sutures other than those of the overlying galea. The wound healed in the normal manner by first intention and has never given trouble. Radiograms taken five years after the operation show that the bone flap has united to the rest of the skull, and that the area of hyperostosis still appears as an area of increased density.

The principle of the frontal flap of Souttar has been applied over other parts of the cerebral hemisphere. The skin pedicle is always wide, the scalp is reflected, and then the bone flap can be cut with as narrow a pedicle as the thickness of the skull requires (fig. 3). An incidental advantage of this method of craniotomy is that it minimises bleeding from the internal surface of the bone flap after operation and in consequence greatly reduces the risk of postoperative extradural hæmatoma; in addition, collections of fluid accumulating on the surface of the brain or dura after operation escape into the subaponeurotic space, whence they can be removed by aspirating needle during the first few days after operation. The skin flap quickly adheres once more to the underlying bone, and I have had but one case, a case of external hydrocephalus of unknown origin in an adult, in which a bag of fluid collected between scalp and bone and required repeated aspiration during a period of six months before it finally subsided. Although this method of separating scalp from bone in osteoplastic craniotomy has proved satisfactory, it is necessary to add that it does introduce a slight risk of osteomyelitis of the bone of the flap that was not present with the older method.

In prolonged operations the scalp may become infected as a result of constriction of its blood-supply by the weight of hæmostatic clamps applied to the galea (fig. 4). This variety of infection occurs particularly in the middle line of the forehead, where the scalp is less vascular and the galea more fragile than elsewhere. The remedy is the simple one of removing the clamps; after the first hour of a cranial operation bleeding from the scalp is so slight that most, if not all, the hæmostatic forceps can be removed, such scalp bleeding as still tends to occur being controlled by the pressure of gauze.

Procaine necrosis.—Procaine-adrenaline solution is used in nearly all cranial operations in a number of clinics, not only in those cases operated on entirely under local anæsthesia but also for its hæmostatic effect in cases done under general anæsthesia. On rare occasions necrosis of the scalp has been reported after the use of procaine. I have not had such a case, though I have seen an area of skin necrosis following the use of procaine, without adrenaline, before lumbar puncture; but one of my friends tells me that he had four cases of scalp sloughing in one week from procaine which on analysis proved to be grossly hypertonic. Procaine solutions tend to be acid and to become more strongly acid when heated, but that acidity alone could be responsible for skin necrosis seems unlikely from the fact that insulin, also an acid solution, does not produce ill effects.

Thus, in scalp infections the important factor is impairment of blood-supply of the edges of the wound rather than the infective element, which is probably always present, even in the most sterile conditions. To this I will refer later.

* An address delivered before the Manchester Surgical Society, Feb. 21, 1939.

BONE INFECTION

Osteomyelitis is a rare variety of postoperative infection. It may be primary, or secondary to scalp infection, or may arise from perforation of the frontal sinus during craniotomy. I have seen three cases after operation for intracranial tumour, and there was no hint of meningitis in any of them. Two recovered on removal of the bone flap, and the third died from the effects of an incompletely removed tumour.

STREPTOCOCCAL DROPLET INFECTION

A great deal has been written on streptococcal droplet infection in recent years. My own experiences occurred in 1934 and were reported to the Society of Neurological Surgeons in the following year.

In September, 1934, a patient died, thirty-six hours after complete removal of an acoustic neurinoma, from streptococcal meningitis of a most fulminating character. One month later another patient, a child aged 7, died of streptococcal meningitis and ventriculitis six days after removal of a very large ependymoma from the lateral ventricle. At this time throat swabs of the various people concerned with the operations showed that a positive culture of hæmolytic streptococci was present in my own throat. These streptococci were not typed against those of the fatal infections, but subsequent experiments (see below), undertaken with the help of Dr. Lowenthal, left little doubt that the throat infection was the source of the operative infection. It should be noted that I had had no symptoms of inflammation of the throat, and that on examination my throat was found slightly red but showed no other changes. After two weeks, with no treatment other than gargling with Dettol, the streptococci no longer appeared in cultures of my throat.

Some years previously a similar outbreak of infection had been reported by Cushing (1931), and in his case the trouble had disappeared when a mask of sixteen layers of closely woven gauze had been substituted for one of eight layers. At the time when the outbreak occurred in my department a gauze

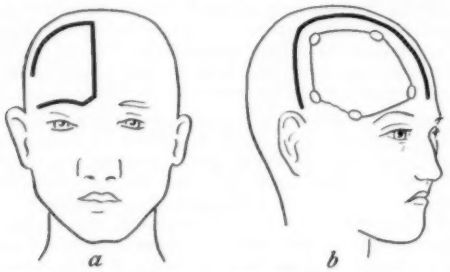

FIG. 1—Frontal scalp flaps: (*a*) old type, (*b*) new type.

mask of sixteen layers was in current use. Experiments of talking over a petri dish at the end of an operation showed that mouth bacteria, including hæmolytic streptococci, could get through this mask and grow on the blood-agar. Further observations showed that gauze masks soaked in dettol, thin linen masks, and masks composed of a mixture of gauze and linen were no barrier against droplet infection. All these masks were worn for an hour or more before testing, in order to reproduce the condition that obtains in operations.

Experiments were now undertaken with a mask of gauze and Cellophane. This mask, designed by Blatt and Dale (1933) and modified by Debenham (1935), has now come into fairly general use. It consists of a thin layer of cellophane between two layers of gauze. It allows the air to escape at the sides, but the droplets from the mouth are caught in the gauze. The masks are sterilised in an autoclave. All the experiments with this mask showed that it was impervious to bacteria, and that the air escaping at the sides was free from bacteria, presumably because the droplets were entangled in the gauze. This mask has since been used as a routine by all persons, except the patient, who enter the operating-, sterilising-, and dressing-rooms, while work or preparation for work is in progress. And since that time there has been no case of hæmolytic streptococcal infection.

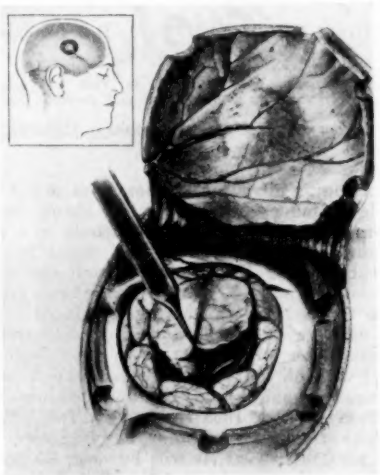

FIG. 2—Operation sketch of a case of frontoparietal meningioma with internal hyperostosis of the skull containing tumour cells.

Streptococcal infections of the throat in hospital workers appear to be becoming more common, and, since they may occur without any symptoms, there is clearly no other way of preventing the risk of infection than by wearing an efficient mask.

The risk of droplet infection is probably greater in operations on the central nervous system than in other regions, partly owing to their greater duration and partly to the greater vulnerability of the brain and meninges. Yet the risk in other fields of surgery cannot be negligible, as is shown by Paine (1935) in an important paper on droplet infection. A patient died of streptococcal peritonitis on the fourth day after panhysterectomy, and a similar strain of streptococcus was shown by agglutination absorption tests to be present in the throats of two of the people present at the operation.

OTHER AIR-BORNE ACUTE INFECTIONS

In addition to the streptococcal infections we have had four cases of acute or subacute meningitis due to organisms hitherto regarded as saprophytic. Dr. Panton isolated in three cases gram-negative bacilli of types that had been hitherto regarded as harmless to man and in the fourth case a *Diplococcus mucosus* which Cowan (1938) found to be capable of killing mice. Two of these patients died, and the other two recovered. The source of these infections

was never traced. Cough plates of the operating staff failed to yield similar organisms. An organism identical with the infecting organism in one case was found in the air of the operating-theatre, but, as the theatre was one which was used by many other surgeons, satisfactory conditions for investigation could not be obtained.

WATER-BORNE INFECTIONS

In one case of hydrocephalus in a young child, the result of meningeal adhesions in the posterior fossa, the simple operation of cerebellar decompression was followed by a fatal purulent meningitis due to a bacillus of the Sonne type. This organism agglutinated to full-titre Sonne serum and in all probability came from saline solution that was used for irrigating the field of operation. Inquiries suggested that the saline solution had been imperfectly sterilised, but the operating-theatre was one that was not under our control, and satisfactory investigations could not be made. After that experience we have used only those saline and Ringer's solutions that come from an unimpeachable source.

During investigations set in train by these distressing incidents it has been discovered that bags of powder used for the hands and gloves may contain living organisms; this is not surprising, since moist heat cannot penetrate to the centre of a bag of powder, and prolonged dry heat is therefore needed if powder bags continue to be used for the hands.

AUTO-INFECTION

The type of case that is included under this heading is that of the patient who is operated on for some intracranial lesion, such as a tumour, while suffering from streptococcal infection of the throat, and then develops a streptococcal meningitis. I have not had such a case, and so far as I am aware there is no definite bacteriological proof that this type of auto-infection can occur. However, a colleague in another city tells me that he has had three cases of this nature, and it behoves us to be on our guard when contemplating intracranial operations on patients with obvious or suspicious foci of infection, or with unexplained pyrexia. The use of sulphonamide compounds is clearly indicated as a prophylactic in such of these cases as require operation urgently.

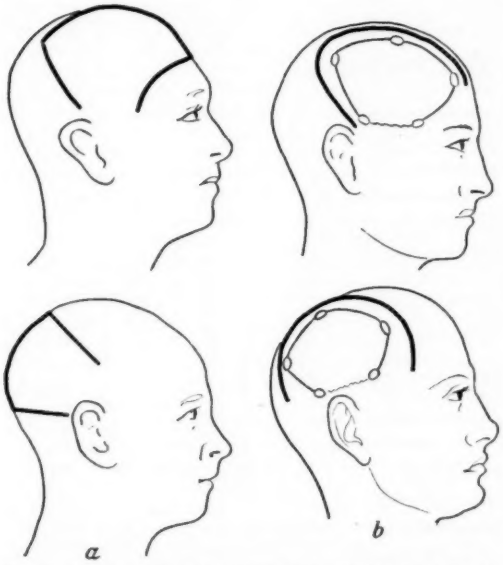

FIG. 3—Skin incisions for lateral osteoplastic craniotomy: (*a*) old types, (*b*) new types.

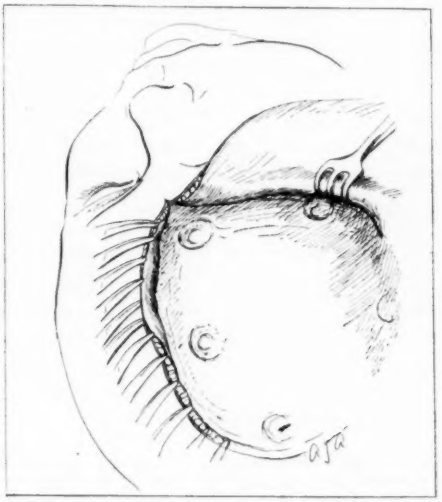

FIG. 4—Constriction of scalp vessels in wound edge by clamps attached to galea aponeurotica.

Another variety of postoperative meningitis which may be discussed in this section is that due to intensification of pre-existing unrecognised meningeal infection. The following case is an example.

CASE 1.—A child, aged 3, was admitted to the Radcliffe Infirmary on Oct. 15, 1938, with a diagnosis of cerebellar tumour. For four months before admission he had been having attacks of headache and vomiting of increasing severity and had become progressively unsteady in walking, irritable, and incontinent.

Before the onset of the headache events had occurred the significance of which was not realised until after operation. The child had not been in perfect health since March, 1938, when he had the first of three prophylactic inoculations against diphtheria; after each of these inoculations he had a severe reaction, consisting of drowsiness, anorexia, and irritability, and it was a fortnight after the third reaction that the headache began.

Examination showed slight enlargement of the head, papilloedema (3D in each eye), bilateral weakness of the external rectus muscle, generalised hypotonia, gross ataxia of the lower limbs, and diminished knee-jerks and ankle-jerks. The report of a lumbar puncture done before admission stated that the resting pressure was 300 mm., and that the fluid contained 0·1 per cent. of protein and no cells.

Operation was undertaken on Oct. 27, 1938, on a diagnosis of cerebellar tumour. On exposure of the posterior fossa no tumour was found, but instead a greatly distended cisterna magna, the leptomeninx of which was thickened, in places flecked with white spots and lightly adherent both to the dura and to the cerebellar tonsils. Part of the arachnoid was removed for histological examination.

Sections of the arachnoid showed numerous aggregations of polymorphonuclear leucocytes, small lymphocytes, and an occasional plasma cell throughout the thickened arachnoid.

There was a stormy convalescence, followed soon by signs of meningitis and a steady increase of cells in the cerebrospinal fluid, up to 2000 per c.mm.,

TABLE I—MAJOR OPERATIONS FOR INTRACRANIAL TUMOUR, 1927–38

Year	Cases	Operations	Deaths	Case-mortality (per cent.)	Operation mortality (per cent.)	Deaths from infection
LONDON						
1927	5	6	1	20·0	16·6	..
1928	29	40	8	27·6	20·0	2
1929	37	46	8	21·6	17·4	1
1930	44	50	10	22·7	20·0	..
1931	53	63	12	22·6	19·0	2
1932	97	112	14	14·4	12·5	..
1933	128	144	25	19·5	17·4	2
1934	115	130	23	20·0	17·7	6
1935	96	105	25	26·0	23·8	5
1936	120	138	12	10·0	8·7	3
1937–38	71	79	9	12·7	11·4	1
OXFORD						
1938	51	55	3	5·9	5·4	1*

* Case 1 of this paper.

mostly polymorphonuclear neutrophils. Cultures of the cerebrospinal fluid were at first sterile but eventually yielded on several occasions a pure growth of *Staphylococcus albus*. Numerous forms of drainage and the usual drugs were tried, but the child gradually sank and died on Dec. 5, 1938.

Comment.—This was clearly a case of low-grade pyogenic meningitis following inoculations against diphtheria, which had been stirred up by operation. Had the true nature of the case been recognised before operation, it is probable that recovery with preservation of vision might have been obtained by repeated lumbar punctures.

LOW-GRADE AIR-BORNE INFECTIONS

There is a variety of low-grade operative infection which, though not followed by suppuration in the meninges, is nevertheless very serious in effects. It occurs particularly after removal of tumours from the posterior fossa, from the vermis and cerebello-pontine angle, when the cisterna magna and other large cisterns have been opened. It is slow in onset, and the preliminary manifestations consist usually of slight fever and pleocytosis of moderate degree in the cerebrospinal fluid, usually less than 500 cells per c.mm. With suitable methods organisms can usually be cultivated from the cerebrospinal fluid—*Staph. albus*, *Micrococcus tetragenus*, and other so-called saprophytic organisms. The result of this low-grade infection is not a pyogenic infiltration of the meninges but rather an adhesive meningitis, which accentuates the hydrocephalus that the operation was designed to relieve and may even be fatal. In the terminal stages the infecting bacteria are numerous in the fluid of the lateral ventricles, which is nevertheless still quite clear and watery and may contain only 10–20 cells per c.mm. I described such a case in 1935 (Cairns 1935).

VULNERABILITY OF MENINGES TO INFECTION

It has been stated that brain tissue has little resistance to infection (Cowan 1938), but in the light of my experience it is probably more correct to say that it is in the cerebrospinal pathways rather than in the brain that resistance is feeble. Practically all the cases of operative intracranial infection that I have encountered, as opposed to scalp and bone infection, have been cases in which there was a wide opening of the ventricular or meningeal spaces. After removal of tumours from the cerebral hemisphere without opening the ventricle, meningitis develops with the utmost rarity, notwithstanding the fact that cocci can sometimes be seen in, and even cultivated from, material aspirated from the bed of a tumour a few days after operation. Contamination of the brain with organisms has frequently occurred during the course of operation for brain abscess, and no meningitis or other sign of intracranial infection has occurred. The following is an example.

CASE 2.—A boy, aged 6, had right frontal abscess following a small infected wound of scalp twelve weeks before. At operation on Jan. 24, 1939, a frontal flap was made, part of the right frontal lobe was resected, and an encapsulated abscess was removed. During removal the abscess ruptured, with contamination of the exposed brain. Cultures of the pus of the abscess yielded a profuse growth of *Staph. aureus*.

After operation there was no trace of meningitis. The lumbar cerebrospinal fluid contained 28 cells (Jan. 26) and 8 cells (Feb. 1) per c.mm. and less cells on subsequent occasions.

It might be argued that this patient already had a high resistance to *Staph. aureus*, and that this was the reason why infection did not become generalised. But the following case is a somewhat similar experiment, in which infection of the bone occurred, thus showing that the tissues of a patient infected with *Staph. aureus* are not necessarily immune.

CASE 3.—A male aged 17. In this case operation was undertaken for left temporal abscess on Nov. 22, 1938, after a four weeks' illness of headache and vomiting. A left osteoplastic flap was made, and

TABLE II—MAJOR OPERATIONS FOR INTRACRANIAL TUMOUR, 1936

—	Cases	Operations	Deaths	Case-mortality (per cent.)	Operation mortality (per cent.)	Deaths from infection
Metastatic	1	1	..	..	..	..
Glioma sp. multiforme	6	6	..	..	..	..
Medulloblastoma	5	5	..	..	..	..
Cerebral and pontine astrocytoma	10	13	2	..	..	..
Gliomatosis of meninges	1	1	..	..	..	..
Ganglioneuroma	1	1	..	..	..	..
Ependymoma	4	4	1	..	..	1
Oligodendroglioma	4	5	..	..	..	..
Cerebellar astrocytoma	11	12	1	..	..	..
Unclassified glioma	5	7	2	..	..	..
Total	47	54	..	12·7	11·1	..
Pituitary adenoma	10	12	3	30·0	25·0	..
Meningioma	21	27	2	9·5	7·4	1
Acoustic neurinoma	8	9	..	..	..	..
Blood-vessel tumours and malformations	7	7	..	..	..	..
Cholesteatoma	3	4	..	..	..	..
Cysts of third ventricle	3	3	1	33·3	33·3	1
Tuberculoma	1	1	..	..	..	..
Tumours of skull	1	1	..	..	..	..
Inflammation unspecified	2	2	..	..	..	..
Unverified tumours	16	17	..	..	..	..
Total	120	138	12	10·0	8·7	3

the dura was not opened. About 10 c.cm. of pus were aspirated from the abscess, and the flap was replaced. The pus from the abscess yielded *Staph. aureus*. General recovery was excellent, but localised osteomyelitis developed in the flap, and the wound did not finally heal until sequestrectomy was done on Jan. 18, 1939. The highest cell count obtained in the cerebrospinal fluid after operation was 39 per c.mm.

Comment.—From these observations the presumption is that the brain has considerable resistance to infection. It is the cerebrospinal spaces that are vulnerable, and it seems that bacteria from the air cannot gain effective access to these through the narrow sulci of the cerebral hemispheres but only through the widely opened cisterns and ventricles. Even then the infecting organism must be able to gain direct access. Thus, in subfrontal exploration of the pituitary region the cisterna chiasmaticus is always widely opened, but infection is practically unknown in this operation. This is probably due to the fact that the channel of exposure leading to the cisterna chiasmaticus, like the necks of Pasteur's and Lister's flasks, is narrow and tortuous; organisms dropping into the wound on minute particles of dust fall on to the outer surface of the dura covering the convex surface of the frontal lobe and not into the chiasmal region.

On the score of minimising the risks of infection, as well as for other reasons, there is a clear indication to conserve the arachnoid cisterns as much as possible during operations. Thus, in exposure of the cerebellum for removal of an acoustic neurinoma it is better not to open the cisterna magna but to limit dissection of the arachnoid to the cerebellopontine cistern over the tumour.

ATMOSPHERE OF OPERATING-THEATRE

From the experiences reported above it is clear that the bacterial content of the atmosphere of the operating-theatre is of considerable importance. In 1936 during operations cultures were made on agar and blood-agar plates. The petri dishes measured 9 cm. in diameter and were thus about the same size as the area of brain exposed; they were placed on the instrument table alongside the field of operation. The operating-theatre had an inlet fan which pumped air through a filter of oil and through a wet screen of dettol, but unfiltered air also came in through the cracks in the door, which opened on a main corridor. The theatre floor was scrubbed out each morning before operation and was sprayed with dettol at intervals throughout the operation. The culture plates were incubated for forty-eight hours at 37° C.

In twenty-seven operations which varied in length from 1½ to 10 hours, the average time being about 4 hours, the culture plates accumulated *Staph. albus* at the average rate of 23 colonies per hour, and of these 0–50 per cent. were hæmolytic; *Staph. aureus* accumulated at the average rate of 0·7 colonies per hour. The number of colonies appeared to depend on the number of people in the operating-theatre. In this group of twenty-seven cases two patients died of other causes, both soon after operation. Of the remainder all had first-intention wounds and no trace of sepsis, except two. One of these developed osteomyelitis, due to *Staph. albus* in a bone flap, after a ten hour operation for removal of a large meningioma of the falx; the infection began in the bone, and there was no trace of infection of the meninges; the bone flap had to be sacrificed before the wound finally healed. The other patient, from whom a frontal astrocytoma was removed, had a first-intention wound and no trace of meningeal infection, but fluid accumulating beneath the galea aponeurotica in the first forty-eight hours after operation showed in films an excess of leucocytes, together with gram-positive cocci and gram-negative bacilli, and in cultures yielded a growth of *Staph. albus*. This patient made a satisfactory recovery.

Of the twenty-seven operations there were some six cases in which there was gross exposure of the meningeal spaces, but in none of these was there any trace of infection. In this operating-theatre, as in others examined, plates left exposed over a weekend, when the door of the theatre was locked, showed few or no bacterial flora in the air, in one case no colonies, in another 28 colonies of *Staph. albus* in forty-four hours and none of *Staph. aureus*.

Subsequent experiences in another theatre, which differs from the first in not opening off a main corridor, in being furnished with filtered air under a positive pressure, and in having much less traffic, the bacterial counts have been lower (10 colonies of *Staph. albus* per hour and none of *Staph. aureus*). Furthermore, there have been no cases of sepsis in some eighty major intracranial operations, with the two exceptions mentioned in this paper (cases 1 and 3), neither of which was an infection from without.

Both these theatres are probably above the average for sterility in this country. In other theatres, where conditions are not under control, and where septic operations may follow closely upon sterile operations, the chances of infection are probably considerably greater. The work of Colebrook at Queen Charlotte's (White 1936) on transmission of hæmolytic streptococci by dust leaves little doubt about the possible consequences of mixing cases of streptococcal infections with other cases. These workers found that hæmolytic streptococci could survive in dust for ten weeks and longer.

Hart (1937, 1938), who has made a careful study of the bacteriology of operating-rooms, has found that the number of bacteria in the atmosphere varies directly with the number of people present, and he has concluded that the bacteria arise from the noses and throats of the people in the theatre, notwithstanding efficient masking. An alternative possibility exists that the bacteria are present beforehand in particles of dust, and that the presence of the people stirs up the dust. There are evidently considerable local variations in the flora of operating-theatres: for example, Hart at Duke University, North Carolina, found as many as 78 colonies of *Staph. aureus* per hour on a plate of blood-agar, and most of his infected cases of thoracoplasty were due to this organism (Hart and Gardner 1937), whereas in London the highest figure we obtained for *Staph. aureus* was 3·6 colonies per hour, and most of the intracranial infections were from other organisms.

PREVENTIVE MEASURES

From these observations it is clear that in intracranial operations there are many risks of infection to be added to those that result from imperfect sterilisation of ligatures and instruments, from careless skin preparation, and from contact of the operating team with unsterile objects. For the neurosurgeon the ritual of an intracranial operation is incomplete without much preparatory work. With the aid of his bacteriological colleagues he must satisfy himself of the efficacy of the steam steriliser (Rishworth 1938), of the methods of preparing ligatures, of the purity of the water-supply, and the sterility of his lotions. He must insist on the

use of an efficient mask by all who enter the operating-rooms or sterilising-rooms while operations or preparations for operation are in progress.

The most difficult problem is that of excluding air-borne infection. "The septic energy of the air," as Lister called it, was at one time regarded as the most potent factor in wound infection, but it came to assume a secondary importance for various reasons, not the least of these being the development of abdominal operations and the manifest power of the peritoneum to render innocuous the bacteria of the atmosphere. In recent years the development of surgery in other fields and the increase of streptococcal throat infections have shown once more the importance of air-borne infection.

The operating-theatre for intracranial surgery should be one that is reserved for non-septic cases; it should be suitably shielded from main corridors and supplied with filtered air under positive pressure. Movement stirs up dust, even in the cleanest operating-theatre, and should be at least reduced by providing a separate entrance and gallery for onlookers. Even with these precautions the air of the theatre still contains a considerable number of bacteria when there are people moving about in it, and several methods have recently been introduced to render the air of the operation field sterile. Hart (1937) has attached an ultraviolet light to the operating-theatre spot-light and finds that with certain wave-lengths and intensities it sterilises the atmosphere about the field of operation.† Pulvertaft, Lemon, and Walker (1939) have recently advocated the use of certain antiseptic solutions in extremely fine suspensions by means of an electrically operated spray; this method is simple to apply and should have wide applications if its early promise is fulfilled. Electrostatic precipitation of dust is a method employed in some French operating-theatres of recent design. Sterilisation by heat is used in some bacteriological laboratories by means of a simple form of apparatus devised by Junker. This consists of a narrow upright metal tube about 2 metres high, open at the top and provided with a bunsen burner at its lower end. It stands near one side of the room, and the air passing through it becomes sterilised. Walbum and Reymann (1937) found that by this process bacterial counts were reduced to 6–7 per cent. of their original number.

The advantage to the patient of raising the bactericidal property of his blood and spinal fluid by the use of sulphonamide compounds before any operation involving particular risks of infection is one that should not be overlooked.

The preventive measures to be taken during operation include, in addition to the usual gentle handling of tissues, measures to conserve the blood-supply of the scalp, protection of the bone and surface of the brain by means of sheet gutta-percha or sterile wool, and conservation where possible of the arachnoid membrane. Of equal importance is the elimination of unnecessary movement. The intracranial operation is clearly not an occasion for display.

It is possible that drainage of cerebrospinal fluid might diminish the risks of low-grade infections, especially in cases of hydrocephalus. We have evidence that the insertion of a drain may be followed by streptococcal infection of a cerebrospinal space previously not so infected, and this suggests a preference for intermittent drainage by repeated puncture of the tumour bed or ventricle.

The results of major operations for intracranial tumour in my department are seen in table I. The great improvement that has taken place in the last three years is due to a number of causes, of which one is the greatly lowered incidence of infections. In this series operative infection was greatest in 1934–36, at a time when surgical procedures had become more radical and deaths from other causes had been considerably reduced. Doubtless many cases in earlier years were infected at operation but died of other causes before the infection had time to develop.

To what extent the mortality and morbidity of operations in other fields is influenced by operative infections is a subject on which a critical inquiry in this country would be of great interest.

† Dreyer and Campbell-Renton (1936) have made careful studies of the action of ultraviolet light on different bacteria and have shown that the relative bactericidal effect in the spectral lines varies according to the microbe exposed.

SUMMARY

In a 12-year series of major operations for intracranial tumour and allied conditions the incidence of bacterial infection has been studied. There were 968 operations on 846 patients, and the deaths from infection numbered 23. The fatal cases included infections from *Staphylococcus albus* and *aureus*, streptococcus, *Diplococcus mucosus*, *Micrococcus tetragenus*, a bacillus of the Sonne type, and gram-negative bacilli hitherto regarded as harmless to man. Until special measures were taken the incidence of intracranial infection increased as the operative mortality from other causes diminished.

In spite of what have hitherto been regarded as adequate precautions to ensure sterility, infection of the wound may come from the air of the operating-theatre, from the throat of the surgeon and his staff by droplet infection, or from the patient himself.

The brain itself is shown to offer considerable resistance to bacterial infection. Most fatal intracranial infections are due to inoculation of the infecting organism into the larger subarachnoid spaces, or into the ventricles. Mild infections of the basal cisterns without gross pyogenic reaction can be fatal by producing adhesive meningitis.

The measures for prevention of intracranial infection include systematic checking of the efficiency of sterilising and operative technique, methods to diminish the bacterial content of the operating-theatre, adequate masking of the people in the operating-theatre, administration of sulphonamides before operation in certain cases, conservation of the blood-supply of the scalp in all cases, and so far as possible of the arachnoid membrane in operations involving the basal cisterns.

To many bacteriological friends, and in particular Dr. P. N. Panton, Prof. S. P. Bedson, F.R.S., Prof. A. D. Gardner, Mr. R. L. Vollum, D.Phil., Dr. W. H. McMenemey, and Dr. H. Lowenthal, I am indebted for assistance and advice.

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A SIMPLE METHOD FOR MEASURING CLOT-RETRACTION

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The retraction of newly formed blood-clots is often observed but seldom measured, yet for many years it has been remarked that certain pathological states may be accompanied by obvious alterations in its efficiency. As long ago as 1822 Duncan recorded that the clotted blood from a patient with hæmorrhagic purpura did not exude its serum. In 1896 Hayem drew attention to the association between thrombopenia and reduced retraction that is now a familiar clinical and experimental finding. He observed, however, that retraction might be reduced without a diminution of platelets in pneumonia. Cases of "thrombo-asthenia" (athrombopenic purpura hæmorrhagica) described by Glantzmann (1918), jaundice by Carr and Foote (1934), bronchitis by Paviot and Chevallier (1930), and the rabbits implanted with new growth by van Allen (1927) also showed a reduction in clot-retraction with a normal platelet count.

Since these observations appear to be of clinical and academic interest, it is curious that, for the most part, they rely on some arbitrary standard and not on actual measurement. It is true that methods of measurement have been devised by several workers, including van Allen (1927), Fonio (1926), and Tocantins (1935), but these are not sufficiently exact or are too complicated to be widely used. The method to be described here should be found useful, since it is simple and seems to give results that are consistent enough for ordinary purposes.

METHOD

The apparatus required consists only of a graduated centrifuge tube with the scale marked in 0·1 c.cm. divisions, a glass rod, and a cork to fit the mouth of the tube, bored to receive the rod as an easy sliding fit. The rod is about ½ in. longer than the tube and has a small "button" expansion formed about ½ in. from one end.

Retraction is measured as follows. Rather more than 5 c.cm. of blood is obtained by venepuncture. The centrifuge tube is filled from the syringe up to the 5 c.cm. mark. The glass rod is put into the tube, so that the expansion is immersed in the blood, and the cork is fitted, the projecting end of the rod passing through the hole bored to receive it. The tube is then placed in a water-bath at 37° C. and examined from time to time for coagulation of the contained blood. An hour after firm clotting it is removed from the bath. If retraction has taken place, the clot will be seen to have shrunk away from the walls of the tube and to be attached to the rod only. By sliding the rod upwards through the cork, the clot, supported on the expansion, can be raised clear of the expressed fluid, so that the volume of the latter may be measured directly on the graduated scale (fig. 1).

Retraction is expressed in terms of this volume, as a percentage of the original volume of blood. Thus, if 5 c.cm. of blood, after clotting, express 3 c.cm. of fluid, the retraction is $\frac{3\times100}{5}=60$ per cent.

In measuring retraction in this way it is necessary to ensure that the graduated tubes are perfectly clean and are unscratched inside; otherwise the clot may stick to the glass and prevent retraction. Clots that have stuck may be freed by carefully passing a fine stiff wire round the inside of the tube, keeping it in contact with the glass. The tube should then be incubated for a further period of an hour.

RESULTS

With the method described the following experiments were carried out:—

(1) *Time required for completion of normal clot-retraction.*—Blood was taken from ten normal donors and estimations of retraction made in each case. The first readings were made 50 min. after coagulation. The clots were replaced carefully and further readings taken at 10 min. intervals for 40 min. A final set of readings were made twenty-four hours later. In the first 10 min. period, ending 60 min. after clotting, five tubes showed an increase of 0·1 c.cm. in the volume of serum, equivalent to 2 per cent. retraction. During the next three periods no further increase took place in any tube. Twenty-four hours later it was found that in two tubes there was an increase of 0·1 c.cm. compared with the last reading taken the previous day. Retraction was therefore practically complete 60 min. after clotting, and for ordinary purposes it appears that the occasional slight increase during the next twenty-four hours can be neglected. An hour is thus the optimal time for a single reading to be taken, since any delay in retraction will be revealed.

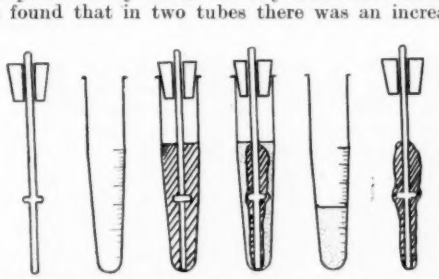

Fig. 1—Diagram showing glass rod, cork, and graduated centrifuge tube, and method of removing clot to measure serum expressed.

(2) *Error of the method.*—Blood was obtained from a patient requiring venesection and was immediately measured by pipette into twenty-five retraction tubes. These were incubated together, and 60 min. after coagulation retraction in each was measured. Readings ranged from 46 to 54 per cent., though nineteen observations lay between 50 and 52 per cent. The mean was 50·03 per cent., the standard deviation 1·76, and the coefficient of variation 3·52 per cent. Taking the limits as $M\pm3\sigma$, it will be seen that in any one sample of blood separate estimations of retraction are unlikely to differ from the mean by more than 5·2 per cent.

(3) *Normal limits of retraction.*—Blood was obtained from fifty normal donors (twenty-seven males and twenty-three females) ranging from 16 to 48 years of age. Retraction was measured in each case, a single reading being taken an hour after clotting. The results obtained are shown in the form of a histogram in fig. 2. They range from 48 to 64 per cent. The mean is 54·72 per cent., the standard deviation 3·6, and the coefficient of variation 6·58 per cent. Taking the limits as $M\pm3\sigma$, the normal range is 43·9–65·5 per cent.

Other experiments were made to determine the effect of various factors on retraction. I hope to

* Assisted by an expenses grant from the Medical Research Council.

publish details elsewhere; therefore only the following conclusions relevant to the present communication will be given now.

(4) *Effect of temperature.*—A rise in temperature causes an increase both in the rate and maximal extent of retraction, until about 47° C. is reached. Above this point retraction is inhibited.

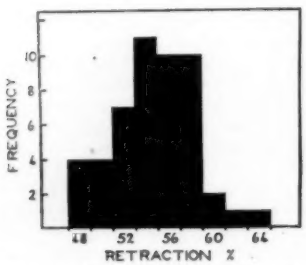

FIG. 2—Histogram showing frequency distribution of retraction readings from 50 normal persons.

(5) *Effect of platelets.*—Below a variable figure in the neighbourhood of 100,000 per c.mm. a reduction in the number of platelets is accompanied by a reduction in retraction.

(6) *Effect of varying cell volume.*—The question of the effect of varying cell volume on retraction is clearly important in view of the common occurrence of anæmia in pathological states. Briefly, my findings in this connexion were as follows:—

(*a*) Plasma clots retract more rapidly than whole blood and to about 90 per cent. of their original volume. Therefore normal clot-retraction will always be brought to a standstill by the volume of cells contained in the clot, if this exceeds 10–15 per cent. of the original volume of blood. It follows that a reduction in cell volume is followed by an increase in retraction.

(*b*) The relationship between the increase in normal retraction and the decrease in packed cell volume is approximately linear, with a ratio of 0·7–0·8. The escape of some of the cells into the serum partially accounts for this ratio being less than one.

(*c*) This relationship does not apply when, in abnormal cases, retraction is deficient. In such cases retraction may be brought to a standstill not by the volume of the cells contained in the clot but by an inherent inability of the fibrin to contract to the extent normally attained. Under these conditions it is clear that a reduction in cell volume cannot increase the extent of retraction.

Thus, whereas it is possible to correct by a simple calculation for the effect of anæmia if retractibility is normal, no such correction can be applied if it is deficient. Hence the application of a correction to pathological cases will produce a distortion, since deficient retraction will be revealed in anæmic cases more often than in those with a normal cell volume. For example, a case with 50 per cent. retraction and 45 per cent. cell volume would be considered normal but would be obviously abnormal if the same retraction figure was obtained when the cell volume was 25 per cent.

Figs. 3A and B give a graphic representation of these points and show the relationship between packed cell volume and retraction in two experiments made with normally and abnormally retracting blood-clot.

(7) *Clot-retraction in pathological conditions.*—Clot-retraction was measured in the way described in 250 pathological cases. Most of these were not selected, being obtained during the collection of blood for routine pathological examination. The investigation was carried out not with the idea of obtaining conclusive evidence on the association of an alteration in retraction with any particular condition but merely to gain an indication that such alterations exist. No correction for anæmia was applied, for the reasons already given, but hæmatocrit and sedimentation-rate readings were obtained in every case. Only an abnormal reduction in retraction was observed. High readings were obtained in anæmia, but none of them exceeded the calculated normal figures by a significant amount. The results are not easy to analyse, since they are not always clear-cut. Table I shows the conditions in which retraction was definitely reduced in some cases.

TABLE I—CLOT-RETRACTION IN PATHOLOGICAL CONDITIONS

Condition	Cases	No. with abnormal retraction	Retraction percentage if abnormal
Bronchitis.. ..	12	3	32, 34, 38
Hypertension and nephritis ..	12	2	22, 28
Jaundice	16	10	0, 0, 20, 26, 26, 30, 34, 34, 36, 40
Lymphadenoma ..	4	1	36
Myelomatosis ..	2	2	0, 0
Pneumonia (lobar)	12	6	22, 24, 32, 36, 38, 38
Pyogenic infection	20	4	26, 38, 38, 40
Thrombopenic purpura.. ..	7	7	Nil in all

In a further series of conditions the retraction readings fell within normal limits (table II). The remaining cases represent a miscellaneous series of conditions, and in these the alterations were too indefinite to justify inclusion.

The conditions that appear to be most often associated with a failure of retraction are jaundice, lobar pneumonia, and thrombopenia. Of the 10

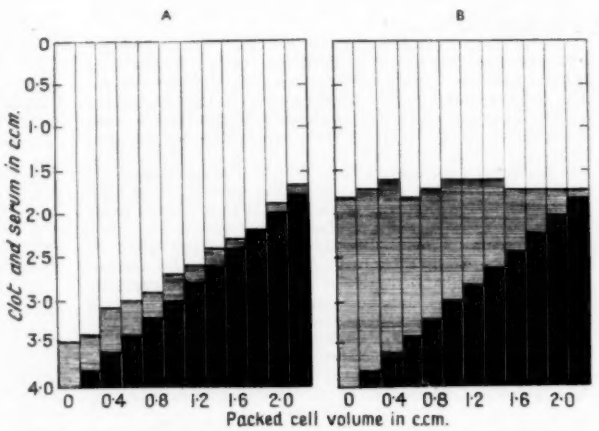

FIG. 3—Diagrams showing effect of increasing packed cell volume on (A) normal, and (B) deficient clot-retraction. The length of the white columns represents the volume of serum expressed, the height of the shaded columns above the base line the volume of clot after retraction, and the height of the black columns the volume of packed cells.

cases of *jaundice* with deficient retraction 4 were definitely due to obstruction, 3 were said to be catarrhal, 1 was associated with cirrhosis of the liver, and 2 were unspecified. The loss of retraction apparently did not depend on the depth of the jaundice, since the highest van den Bergh figures were obtained in groups in which retraction was normal. Two of the 16 patients had hæmorrhagic tendencies with prolonged prothrombin times, and both bled badly after operation. In one, retraction was normal, and in the other it was deficient. In the cases of *pneumonia*, 6 were investigated during the height of the disease, and 6 shortly after the resolution. In the first group 5 gave low retraction readings and 1 was normal. In the second, 5 were normal and the 1 giving a low reading had an empyema. Though only 2 cases have been observed, the failure of retraction in *myelomatosis* is of interest, since a similar finding had been recorded by Stewart and Weber (1938). In all the foregoing cases platelet counts were not made, but stained films were examined in each case, and the presence of abundant platelets was confirmed.

TABLE II

Condition	Cases	Condition	Cases
Athrombopenic purpura	4	Diabetes	5
Hæmophilia	4	Rheumatism and arthritis	11
Telangiectasia	4	Bronchopneumonia	4
Scurvy	3	Thyrotoxicosis	5
Pernicious anæmia	7	Tuberculosis	9
Other anæmias	9	Peptic ulcer	27
		New growth	27

The cases of thrombopenic purpura consisted of 4 cases of idiopathic purpura hæmorrhagica, 2 of acute leukæmia, and 1 of aplastic anæmia. The platelet counts varied from 28,000 to 70,000 per c.mm. As regards the other hæmorrhagic states it is interesting to note that the 4 cases of athrombopenic purpura hæmorrhagica had normal clot-retraction. This condition is presumably that described by Glantzmann (1918) as "thromboasthænia" and by von Willebrand (1931) and others as "pseudo-hæmophilia." It is strongly hereditary, may be passed directly from an affected person to the children, and affects males and females. There is a hæmorrhagic tendency resembling the more familiar thrombopenic purpura, but the platelet count is normal. In all the cases recorded here the bleeding-time was greatly prolonged, varying from 30 min. to over 2 hours, with normal platelet counts.

No significant correlation could be found between the erythrocyte sedimentation-rate and retraction in 100 cases in which the factor of anæmia was eliminated.

SUMMARY

(1) A method for measuring clot-retraction is described.

(2) The error of the method and the normal limits of retraction have been estimated.

(3) The effects of such factors as variation in temperature, number of platelets, and red cell volume have been discussed.

(4) In a series of 250 pathological cases it was found that retraction might be reduced in jaundice, lobar pneumonia, myelomatosis, and other conditions, apart from those with an obvious reduction in the platelets.

(5) In the hæmorrhagic states, retraction was normal in hæmophilia, telangiectasis, and athrombopenic purpura hæmorrhagica. Only in thrombopenic purpura was it reduced.

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COMPOUND FRACTURES OF THE SHAFTS OF LONG BONES

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THESE remarks are based on the treatment, personally conducted, of 173 consecutive cases of compound fracture in which there was no interference with the vitality of the limb by reason of gross injury to its nerve- and blood-supply, and in which the limb was apparently viable and amputation was not clearly inevitable. I have omitted 3 cases of circular-saw injury to the upper extremity, resulting in almost complete amputation.

AVOIDANCE OF SHOCK

It is generally accepted nowadays that a compound fracture is a surgical emergency of the greatest urgency. The earlier treatment is undertaken the greater the chance of eliminating sepsis, and treatment should be carried out within six hours of the accident. There is, fortunately, seldom much cause for delay, for patients with compound fractures of the long bones, unless there is a concurrent injury elsewhere, seldom suffer from severe shock. In a patient suffering from a compound fracture who is evidently shocked or blanched, it is imperative to look elsewhere for further injury—abdominal, thoracic, or cephalic.

Certain mistakes in the management of these injuries can, however, produce profound shock. The application of a tourniquet is a very common feature of the first-aid treatment of compound fractures. Especially in fractures of the tibia, where the nutrient artery is large, the hæmorrhage can be smart, but in most cases it can be controlled by pressure. Main arteries may sometimes be involved thus I have seen the anterior and also the posterior tibial artery cut cleanly across and bleeding actively, but on the whole this type of complication is rare. It therefore seems best to instruct those responsible for the first-aid treatment of these injuries to refrain from applying a tourniquet for hæmorrhage, but to try to control bleeding by pressure bandaging with alternate layers of wool between the turns of the bandage. Apart from the grave shock manifested on the removal of the tourniquet, there is no doubt that

most "road tourniquets" act as a sort of Bier's bandage and cause the patient to lose more blood than if he had been left alone. In the case of the upper extremity the use of rubber-tube tourniquets should be avoided, for they may gravely interfere with the nerve-supply of the arm. Another shock-producing factor is the so-called preparation of the patient. All interference with the limb in the wards by shaving, or washing the skin with antiseptics should be avoided, for this procedure is extremely painful and may be almost intolerable to the patient, and is usually, at best, incomplete. It is advisable to postpone any form of skin preparation until the patient has been brought into the operating-theatre and anæsthetised.

While these patients as a rule show little initial shock, there is no doubt that factors such as those mentioned will produce profound shock. I have also discarded spinal anæsthesia in treating compound fractures of the lower extremity owing to the fall in blood-pressure produced.

GENERAL TECHNIQUE

Under general anæsthesia the part is shaved and the skin cleaned. There is no necessity to apply any strong chemical grease-solvent preparation. It is better to avoid coloured antiseptics and finish the preparation with spirit or Harrington's solution, for in this way the colour of the skin can be accurately observed. The usual prophylactic treatment is given. Tetanus antitoxin, gas-gangrene antitoxin polyvalent, and antistreptococcus serum polyvalent are administered. In addition a residual vaccine [1] is used, three minims containing 15 million *Streptococcus hæmolyticus* and 15 million *Staphylococcus aureus* being given immediately and repeated on the third day after operation.

Successful treatment depends on early excision of the skin wound and of contaminated tissues in the wound, the evacuation of blood-clot, complete hæmostasis, and the accurate approximation of the fractured bone-ends so that no dead-space for a serous collection persists. The urgent need of early operative treatment in these conditions cannot be too strongly urged, nor can the importance of complete exploration. It is futile to excise and suture a small wound without investigating the conditions in the fractured area: this is only sealing an infected wound.

The treatment of the skin wound is of the utmost importance. Where the skin edges can easily be brought together and sutured this will give the patient an excellent start. If easy approximation cannot be secured, and if the skin edges are blanched after suture, then attempts to secure primary suture should be abandoned. A skin wound with blanched edges will surely give way and gape, and a troublesome ulcerated area will thus be formed. It is inadvisable to attempt to secure union by undercutting the skin edges, or by means of incisions parallel to the wound. Primary suture of the wound, then, depends mainly on the extent of the original compound-fracture wound. Where the wound is small primary suture will usually be possible, but it will be impossible where there is much damage to, or destruction of, the skin, especially in the transverse axis of the limb. The nutrition of the skin should be closely observed. Crushed, parchment-like skin invariably dies and gives rise to chronic ulceration which seriously prolongs convalescence. This devitalised skin should, therefore, be excised at the time of operation.

1. Jenkins, C. E., *Brit. med. J.* 1922, **1**, 596.

Discretion should be used in the treatment of other skin injuries in the region of a compound fracture, but if there is doubt as to the viability of the skin it should be excised as economically as possible. One cannot efficiently carry out the toilet of a compound fracture through a button-hole incision, and after the wound edges have been pared and overhanging, ragged and bruised skin edges have been conservatively removed, the wound should be enlarged freely in the long axis of the limb. The outward and visible wound is usually deceptive as to the damage of soft tissue and periosteum underneath. There is usually fairly extensive injury of muscle and a surprising degree of stripping of periosteum, which is often visibly contaminated with foreign material. The bruised and torn muscle edges should be carefully excised and the continuity of the muscle restored with a few points of catgut suture. The excision of the injured periosteum does not seem to have any inhibiting effect on the rate or extent of bone union.

In fractures with displacement there is always a space between the new line of the bone and the soft tissues; this is filled with blood and disappears with accurate reduction of the fracture, where this is possible. The obliteration of this space is important because of its tendency to drain through the wound with the formation of a sinus, which may at first be aseptic, but where there is a danger of secondary infection. Advantage should be taken of the exposure of the bone ends to obliterate this dead-space. The hæmostasis should be meticulous to avoid further hæmatoma formation.

The bone ends should be carefully dried and approximated as in the deliberate open reduction of a fracture, after being swabbed with some antiseptic. This accurate apposition of the bone ends ensures a "dry" wound, the soft tissues falling naturally over the line of the bone with no resultant dead-space, such as is inevitable if poor alignment or angulation is allowed to persist.

The transverse type of fracture usually dovetails accurately and the stability of the bone is good. Where the fracture is oblique or comminuted, and where the stability of the limb is not good, one is often faced with the necessity of introducing some form of internal fixation material. Teaching and tradition are strongly against such a procedure, but my own observations suggest that its dangers in the case of recent compound fractures subjected to immediate operation have been exaggerated. In this series 38 cases have had internal fixation—wire, silkworm gut, and kangaroo tendon having been employed. In no case was any sepsis caused by the foreign material. Bad alignment ensued in one compound fracture of the tibia, with marked loss of soft tissue and skin on the anterior and medial aspects of the bone. This was due to removal of the wire too early, the lower fragment sagging posteriorly immediately the wire was removed. Where foreign material is introduced superficially, as in a wired tibia, there is always a tendency for the overlying skin to become ulcerated, even after it has healed for some time. The removal of the fixation material in this case is usually a simple matter, and healing automatically follows.

The wound should be made as dry as possible. All tiny chips or fragments of bone should be removed, and anything in the nature of "bone meal" cleared out. Any fragment of bone of considerable size should be retained, for in its original site it may facilitate restoration and maintenance of alignment when reduction is effected.

With regard to the antiseptic treatment of the wound, I have used a 1 per cent. mercurochrome solution for swabbing the injured soft tissues and the bone ends. There is no special virtue in swilling the wound out with ether—in fact my impression is that ether has a deleterious effect on new-bone formation, and that where it has been employed union has been slow. Probably in cases treated early no form of wound antiseptic is necessary, but one should certainly give the patient the benefit of the doubt.

External fixation has, in this series, been carried out by immobilisation of the limb in plaster-of-paris. Any method of treatment that requires constant adjustment and supervision of apparatus is obviously unsuited for this type of injury, and the one method which does not demand such constant adjustment and supervision is plaster-of-paris fixation. If, as is sometimes the case after reduction, the fixation of the bone fragments seems a little precarious, the incorporation of a suitably padded sterile metal gutter-splint during the application of the plaster will give the required stability. A properly applied plaster cast eliminates the necessity for interference with the part, facilitates nursing, and permits the patient to move in comfort and safety. Where there has been primary suture of the skin wound the plaster may be intact, but where an extensive open area is present it is advisable to have some form of inspection window cut. The drawback to the rigid Winnett Orr technique is that where an extensive granulating area is present the stench becomes intolerable to the patient and those around him, so that it is an advantage to have an inspection window through which the wound can be occasionally inspected, cleansed and dressed. While the patient is at rest there is no danger of "window œdema," but this condition is common in the ambulatory patient. Where possible patients are allowed to walk early, but this line of treatment is not always possible, especially where there has been extensive damage to the skin and soft parts, necessitating comparatively bulky dressings, and in bilateral cases. In the former group it is advisable to allow a period of rest—say 4–5 weeks—for swelling of the limb to subside, for the raw area to heal and the fracture to become "sticky," before applying a new close-fitting plaster case and encouraging the patient to begin walking.

No doubt many of the methods adopted in this series of cases will arouse criticism, but the results are, I think, sufficiently satisfactory to justify them. In the earlier cases there were some errors in treatment, such as allowing active weight-bearing too soon with resultant deformity requiring operative correction, but there have been no cases of gross bone infection after a compound fracture treated on these lines.

SUMMARY

In compound fractures of the long bones hæmorrhage and shock may be increased by the imperfect application of tourniquets as a first-aid measure. Shock may be produced by preparing the skin of the part before the patient is anæsthetised.

In 173 consecutive cases personally conducted the fracture site was completely explored after conservative excision of the skin and wounded tissues had been carried out by enlarging the wound in the long axis of the limb. Open reduction of the fractures was thus facilitated.

In 38 cases internal fixation-materials—wire, silkworm gut and kangaroo tendon—were used without producing sepsis. In all cases external fixation was maintained with plaster-of-paris.

CLIMATE AS A FACTOR IN EPIDEMIC MENINGITIS IN KORDOFAN

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In the Northern Sudan, where an annual dry season alternates with a wet season, epidemics of meningococcal meningitis invariably start early in the dry season and finish at the onset of the rains. It has been popularly supposed that the actual rainfall stops them, and in the past, among other countermeasures, an increased use of watering carts has been adopted in Khartoum epidemics, the presumption no doubt being that infection might be dust-borne. Riding and Corkill (1932) showed that on a monthly graph, in a Khartoum epidemic, incidence rose as humidity dropped and dropped as humidity rose. The association was graphically exact, and rain was assumed to be the cause.

The relationship later seemed to me to be capable of explanation by the appearance in the previously parched country of vernal greenery, particularly young grass, implying the advent of the "anti-infective" vitamin A to the public milk-supply. Large epidemics occurred in the years 1934, 1935, and 1936 in Kordofan, the Nuba mountains area of which was under my administration, and opportunities were presented for testing this hypothesis and collecting data relating climatic factors to such epidemics. Figures were plotted fortnightly, meteorological data being taken from the daily observations of the local unit of the department of agriculture in Kadugli. They are considered sufficiently representative of the area as a whole.

RAINFALL

The wet season of 1934 closed with 100 mm. of rain in the fortnight ending Nov. 3. In the fortnight ending Nov. 17 the first two cases of a new epidemic were reported; there had already been an epidemic in the preceding dry season. The epidemic started to drop in the fortnight ending April 6 and closed in the fortnight ending May 18. Rain fell first in the first week of May; hence the falling of rain is shown not to have initiated the closure of the epidemic. Similarly, in the following dry season, the climatic accident of a heavy rain shower in February being disregarded, the epidemic was practically terminated before the first rain of the wet season.

In 1935, at the end of April, the country was burnt, barren, brown, and dry. Light rain fell in the first week of May, by the 7th telegrams had come in from representative parts of the area reporting vernal greenery, and by the 14th stock animals were reported to be grazing on such greenery, now two inches and more tall. Even if an appreciable advent of vitamin A to the milk-supply is assumed to have been associated with the earliest possible green grazing it cannot have initiated the closure of the epidemic, for this commenced over a month earlier. Clearly, rain *qua* rain did not close the epidemic.

HUMIDITY

In the 1932 Khartoum epidemic the monthly graph referred to above showed that the epidemic started with the humidity at 20 per cent. and began to fall as the humidity rose to 37 per cent. In the Nuba Mountains in 1934 the epidemic commenced as the humidity fell from 61 to 40 per cent. and started to close at 28 per cent., actually finishing as the humidity rose from 40 to 65 per cent. In the

following season it started as the humidity fell from 27 to 25 per cent. (having averaged 60 per cent. for the preceding fortnight), started to close as humidity rose from 28 to 35 per cent., and closed with the humidity at 46 per cent. The milder epidemic of 1935–36 was associated with a higher average general humidity throughout the dry season, there being two intra-epidemic minor peaks of humidity and one extremely unusual shower of rain in the middle of the dry season. The association is clear and constant; but, since the epidemics begin to close before humidity actually rises, the relationship is not directly causal but incidental, and therefore the causal factor must be sought in something associated with but preceding the rise of humidity at the end of an epidemic. The only phenomenon offering itself in this respect is cloudiness, and, although no records were taken, it was a matter of experience that clouds appeared well before the rise in humidity.

Here it is desirable to quote the observations of Lieut.-Colonel G. K. Maurice, senior medical inspector, Darfur, on the epidemics in that province in 1935 and 1936. He wrote that, when the disease appeared in the province in April, 1935, the humid south alone was untouched. The epidemic ended latest in the dry northern part of the central district. Of the 1936 epidemic he wrote that, although there were no clouds in Darfur when the epidemic ended or for long after, its closure synchronised with the advent of increased humidity, as shown, in the absence of records, by the increased greenness of the trees. "Everything points to humidity somehow playing an important part in closing or preventing an epidemic of C.S.M. In 1936 it ended first and abruptly in the humid south."

Here, again, the association with humidity, though unmeasured, is indisputable. A factor or factors associated with both cloudiness and humidity must therefore be sought, and the questions of temperature and sunlight examined.

TEMPERATURE AND SUNLIGHT

The figure shows that extremes either of heat or cold had no apparent effect on opening or closing an epidemic. Such extremes, however, accentuated the rise of the epidemic, and milder temperatures decreased the abruptness of the rise. This phenomenon is well shown, apart from other phases of the graph, by the climatic accident in February, 1936, when there was a fall of 72 mm. of rain in the middle of the dry season and at the height of the epidemic. Humidity rose, maximal and minimal temperatures fell, the pace of the epidemic slowed down, and there was a drop in the fatality-rate. This last, however, was anomalous; for, viewing the graph curves broadly and discounting fatality-rates in series of under 20 cases and for the two fortnights ending Jan. 11 (in which it is known that there was a delay in reporting deaths from a remote major focus), it is seen that, as a general proposition, when cases increase abruptly the fatality-rate falls, and when they decrease abruptly the fatality-rate rises. This is not invalidated by lag due to patients dying, because the average death-time for the epidemic was between 3 and 4 days, and the graph time-unit is a fortnight.

Clouds reduce actinic, especially the ultraviolet, irradiation. Humidity also much reduces the ultraviolet rays. This reduction, it is suggested, is the important climatic factor in the epidemiology.

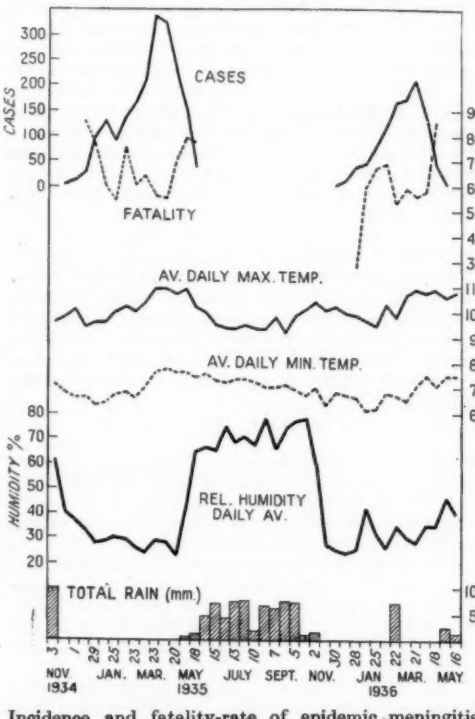
DISCUSSION

I suggest that susceptibility to meningitis is a deficiency condition and is accentuated by exposure to ultraviolet rays. In the laboratory Mouriquand, Rollet, and Courbières (1935) found that in rats on a diet deficient in vitamin A exposure to ultraviolet irradiation caused eye lesions tending to pass into keratomalacia and healing more slowly than superficial eye burns in control rats on normal diet. Frank (1937) found that A-deficient rats showed their deficiency sooner if exposed to light than if kept in poorly lighted rooms.

Xerophthalmia, keratomalacia, and hemeralopia are fairly common among tribal Sudanese; phrynoderma, a non-specific spastic paraplegia, pellagra, and scurvy are diagnosed from time to time; and their diet (with non-relevant exceptions), notably in the Nuba area, is characterised by richness in carbohydrate, low protein content, and an apparent absence of vitamins A, B_2, and C for 4–6 months a year, a state of affairs mainly due to seasonal desiccation.

If my thesis is correct, it should be found that meningitis epidemics in northern latitudes occur when the bright sunlight of spring accentuates the vitamin deficiency which has been experienced in the cold sunless vegetation-destroying winter. Such is precisely the case, and in Scandinavia, it may be noted, spring is also the scurvy season. Schiøtz (1935) has indeed pointed out that in Norway the peaks of meningitis and keratomalacia occur together at this time, suggesting activation of a vitamin-A deficiency by ultraviolet rays as a factor common to both conditions.

It has been pointed out above that, apart from anomalies, as the epidemic rises or accentuates its rise, fatality-rate decreases, and that it increases as the epidemic closes or lessens its degree of increase, and that such phenomena are related to the suscep



Incidence and fatality-rate of epidemic meningitis in relation to climatic factors. (Fatality-rates not valid for the period Dec. 14, 1935–Jan. 11, 1936: see text.)

tibility-accentuating factors of extremes of temperature and ultraviolet rays. The explanation may be that, in persons on the verge of being clinically affected, increased intensity of these factors will precipitate them into active disease, but as their resistance is stronger than that of persons who would ordinarily get the disease, they dilute the fatality-rate. Conversely, milder temperature and irradiation effects mean that only the persons of very low nutritional status are affected, the fatality-rate being thus concentrated.

If this hypothesis is correct, a law emerges to the effect that, when in an epidemic incidence rises but fatality drops, a factor is at work increasing susceptibility; and, when incidence decreases but fatality rises, a factor is at work decreasing susceptibility, and a background of malnutrition to the epidemic may be suspected. This can apply only if death-time is well within the graph time-unit. That this law may be valid was shown by me in 1935 (Corkill 1936). A community given prophylactic vitamin A had fewer cases but a higher death-rate than a comparable community not so treated, suggesting that a factor —i.e., vitamin A—decreasing susceptibility was involved.

CONCLUSIONS

It is concluded that susceptibility to meningococcal meningitis is a deficiency state, and that climate is an important factor in epidemics in that ultraviolet irradiation activates mass susceptibility and causes epidemics, and extremes of temperature accentuate this susceptibility. Clouds and humidity are beneficial in that they reduce ultraviolet radiation; the association of rainfall is incidental.

An important point is that in an epidemic, before populations are turned out wholesale from their villages to obviate the very important factor of overcrowding, it should be secured that their temporary shelters give adequate protection from bright sunlight and cold winds; otherwise the weighty factor of exposure is thrown into a scale-pan already heavily dipped by the factors of malnutrition and, presumably, a heavy carrier-rate. This has been a matter of experience in the Nuba mountains and, it is understood, in Darfur.

SUMMARY

(1) Popular opinion in the Northern Sudan associates epidemics of meningitis with the dry season and their closure with the onset of the rains; but rain is merely an incidental factor.

(2) Since humidity and clouds are associated with the closure of epidemics, and temperature extremes increase susceptibility to the disease but decrease the fatality-rate, and sunlight is associated with the disease, it is suggested that clouds and humidity close epidemics by decreasing solar irradiation. Susceptibility to meningococcal meningitis may be regarded as a deficiency state, being activated by seasonal advent of heavy ultraviolet irradiation. Laboratory evidence of activation of deficiency states by ultraviolet irradiation is given, and the tribal populations involved are shown necessarily to be deficient in protein and vitamins A, B_2, and C. Classical deficiency diseases occur among them.

(3) A similar argument applied to northern latitudes explains the local epidemiology of epidemic meningitis.

(4) A new law relating graph phenomena in an epidemic to a malnutritional background is tentatively formulated.

(5) It is concluded that quarantine measures disregarding the factor of exposure may be very harmful.

I am indebted to Dr. E. D. Pridie, director of the Sudan Medical Service, for permission to publish; to Lieut.-Colonel G. K. Maurice, formerly senior medical inspector in Darfur, for permission to use his observations on a coincident epidemic in that province; and to Dr. F. L. Wheaton, S.M.S., for the reference to the observations of Dr. Schiøtz.

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EFFECT OF FOLLICULAR HORMONE ON MENOPAUSAL FLUSHES

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Although the efficacy of ovarian follicular hormone in menopausal disorders is generally recognised, much remains to be learnt about the dosage. This paper reports the use of comparatively small doses in 51 cases where the menopause had been induced with radium. The indication for treatment was the symptom generally called "flushings" or "hot sweats," and since this is the best-defined, as well as the commonest, of all the many menopausal complaints, it was used as an index of therapeutic action.

Whatever part other endocrine or nervous influences may play in causing these flushes, they certainly follow the withdrawal of the ovarian influence, and administration of ovarian hormone is rational. In judging its effect, however, one must remember that the patients are apt to be in a highly suggestible state. Thus in 100 cases at the normal menopause Pratt and Thomas (1937) found that the general condition benefited as much from lactose tablets and injections of sterile oil as from preparations containing ovarian hormones. In the present inquiry I have tried to eliminate the psychological factor by asking the women to take written notes of the number, severity and duration of the "flushes," and by substituting dummy tablets of lactose in every fifth patient treated.

In the majority of cases hormone therapy was started 8–12 weeks after radium was used, and, although "flushes" have developed in this interval, it is my experience that as a rule a considerably longer time elapses before the mental changes become apparent.

In women over 40 the interval between the radium treatment and the onset of "hot flushes" varies considerably, but the average time is probably four to eight weeks. In surgical castrates and younger women the onset is much quicker. Werner (1935) found an immediate onset in 44 out of 53 castrates; though he also said that some women might have a period of delayed onset varying from six months to six years. In all my cases "flushes" had developed to various degrees by the eighth week after radium treatment.

DOSAGE AND RESULTS

Most authorities, including Kaufmann, have expressed the belief that large doses of hormones

are necessary to produce relief in castrates; but Bishop (1938) reports that 0·6 mg. of œstrone daily by mouth controlled the "flushings" of a surgical castrate aged 20.

When the castration is brought about by radium, the cessation of the ovarian secretion is less sudden, and patients of more mature age are probably less affected by the loss of this secretion. In this investigation all the patients were over 40, most of them being about 45. Compared with the normal standards, very small doses of hormone have been given—so small, in fact, that noticeable results were hardly to be expected. But satisfactory results were obtained in nearly every case, although few were completely relieved. A gradual readjustment of the endocrine balance was aimed at, instead of mere postponement of the severe symptoms by massive doses of hormone. Although injection is usually more efficient the hormone was given by mouth. Apart from expense, this is the most practical method for practitioners who deal with large numbers of these patients and find it difficult to give frequent hypodermic injections.

The 51 women were treated over periods varying up to six months. In most cases treatment began between the eighth and twelfth weeks after the radium. The preparation of follicular hormone used was Gynœstryl (Roussel) of which each tablet contains 0·025 mg. of œstradiol. The largest daily dose given was 8 tablets (0·2 mg. of œstradiol).

The procedure, in an average case, was as follows. The patient was given 4 tablets daily, and the dose was increased to 6 or 8 tablets, according to the result at the end of fourteen days. After four weeks at the increased dose, if the "flushes" were sufficiently controlled to cause the patient no discomfort, the tablets were reduced to 6 or 4, and finally to 2. Any improvement noted was as a rule maintained and it proved unnecessary to revert to a larger dose. The accompanying table shows the number of "flushes" in twenty-four hours at the beginning of treatment and the lowest number this could be reduced to with the above dosage of hormone. The effect on the severity and duration of the "flushes," as noted by the patient, is also recorded.

One in every five cases treated was given dummy tablets of lactose, presented in a similar packing. In these patients, although some said that the severity and duration of the "flushes" were lessened, there was no reduction of the number in twenty-four hours.

EFFECTS OF FOLLICULAR HORMONE ON VASOMOTOR FLUSHES AFTER ARTIFICIAL MENOPAUSE

Case	Number of flushes in 24 hours.		Severity	Duration	Highest daily dose in tablets
	Before treatment	After œstradiol			
1	3	0	—	—	4
2	About 24	8	Less	Shorter	8
3	4	2	Less	Same	6
4	7	2	Less	Shorter	6
5	3	0	—	—	4
6	14	8	Less	Shorter	8
7	4	1	Less	Same	6
8	4	3 a week	Same	Same	6
9	6	0	—	—	6
10	2	0	—	—	6
11	8	8	Less	Shorter	8
12	7	5	Less	Shorter	8
13	4	3	Less	Shorter	4
14	4	2	Same	Same	6
15	3	1 a week	—	—	6
16	15	4	Less	Shorter	6
17	8	3*	Less	Same	6
18	6	3	Less	Shorter	8
19	8	3	Less	Same	6
20	4	1	Less	Shorter	4
21	4	0	—	—	6
22	2	0	—	—	4
23	4	1 a week	Less	Same	4
24	10	4	Less	Shorter	6
25	1	1	Same	Same	6
26	2	0	—	—	4
27	3	1*	—	—	8
28	12	12	Less	Shorter	8
29	6	2	Less	Shorter	6
30	5	0	—	—	6
31	2	1*	—	—	6
32	2	2	Less	Shorter	8
33	4	0	—	—	6
34	4	2	Less	Shorter	6
35	6	2	Less	Same	6
36	5	3	Less	Shorter	4
37	5	4	Less	Shorter	4
38	About 30	12	Less	Shorter	8
39	7	1*	Less	Shorter	6
40	6	4	Same	Same	8
41	10	3	Less	Shorter	8
42	5	1	Less	Shorter	4
43	12	4	Less	Same	8
44	3	0	—	—	4
45	12	4	Less	Same	6
46	2	0	—	—	4
47	5	2	Less	Same	4
48	4	4	Less	Same	8
49	8	4	Less	Shorter	6
50	4	1	Same	Same	6
51	8	4	Less	Shorter	8

* Sometimes nil.

DISCUSSION

The results indicate that œstradiol reduces the number, severity and duration of "hot flushes" after a radium menopause. In 11 cases, as shown by the table, a complete cure resulted, the average period of treatment being about four weeks; but these were mostly patients with a small number of "flushes" daily, before treatment started. In only 5 cases did treatment fail to reduce the number of "flushes," and in 4 of these their severity lessened. In assessing results one had to rely on the patients' statements, and the emotional instability of women at the menopause reduces the value of such evidence. But the use of dummy tablets and the written notes help to eliminate this source of error.

Since administration of follicular hormone over long periods is expensive, a knowledge of the efficacy of small doses by mouth may be of use to practitioners. Throughout this investigation, therefore, the doses were kept extremely low, although no doubt they could in many cases have been increased with advantage, and complementary injections might have given even better results. The cost averaged 3*s.* 6*d.* per week per patient.

SUMMARY

(1) Follicular hormone (œstradiol) was administered to 51 women suffering from "hot flushes" after an artificial menopause induced by radium.

(2) The hormone was given only by mouth and the dosage purposely kept very low so as to estimate the effect of the limited quantities likely to be available for such cases in general practice.

(3) In nearly all cases the number and severity of the "flushes" were reduced, and most of the less severe cases were cured.

(4) After the tablets had been gradually withdrawn there was seldom any recurrence of symptoms within the next six months.

My thanks are due to the honorary staff of the Hospital for Women, Soho, for permission to treat cases from their outpatient department in the endocrine clinic, and to Dr. F. L. McLaughlin of Roussel Laboratories Ltd. for liberal supplies of gynœstryl.

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ACQUIRED TOLERANCE OF PNEUMOCOCCUS TO M. & B. 693

By R. W. Ross, M.R.C.S.

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THAT pneumococci can rapidly acquire tolerance or fastness to M. & B. 693 in laboratory animals has been shown by Maclean, Rogers, and Fleming (1939). No direct evidence, however, has been recorded that organisms which have invaded the human body have acquired tolerance to the sulphanilamide group of drugs administered therapeutically, although Cokkinis and McElligott (1938), in their report of the treatment of gonorrhœa with sulphanilamide, say that, if cases are treated early before immunity can develop or with initially insufficient doses, relapses, if they take place, are very resistant to further treatment with sulphanilamide. The experiments recorded in this article show that, in a case of pneumococcal meningitis, the pneumococcus isolated post mortem, after intensive treatment of the patient with M. & B. 693, was much more resistant to the drug than was the pneumococcus isolated early in the infection.

CULTURES AND EXPERIMENTS

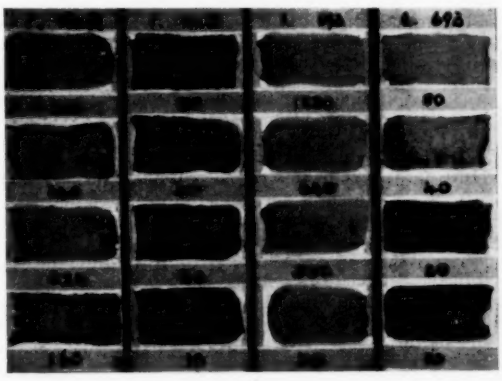
The cultures used were sent by Dr. T. C. Backhouse, of the public health laboratory, Rabaul, New Guinea, to Prof. A. Fleming. They were obtained from a fulminating case of pneumococcal meningitis in a native. One culture was isolated during the first twenty-four hours of treatment with M. & B. 693; the other was obtained post mortem after three more days of intensive treatment. The clinical details, kindly supplied by Dr. Backhouse, are shown in table I.

TABLE I—CLINICAL DETAILS OF THE CASE OF PNEUMOCOCCAL MENINGITIS FROM WHICH BLOOD-CULTURES WERE OBTAINED

Date in Feb. 1939	Clinical history	Condition of C.S.F.	Blood-culture	Dosage of M. & B. 693 (g.)	Concentration of M. & B. 693 in—	
					C.S.F.	Blood
					Mg. per 100 c.cm.	
22nd	Admitted with pains in chest and stiff neck	—	Not done	2	..	Not done
23rd	Well-marked meningeal signs. Patient unconscious Temp. 102° F.	Opalescent Pressure + + Numerous polymorphs Culture + +*	Heavy growth	10·5	None detected	Not done
24th	No great change Temp. 99·8° F.	Opalescent Pressure + Culture + +	Heavy growth	16	6	5·6
25th	Slight improvement early, followed by fits	Clearer Culture +	Negative		32	22
26th	Fits continued until death, 3 A.M.	Very turbid Culture +†	Not done	..	33	Not done
			Total ..	28·5		

* Strain 1 derived from this.
† Strain 2 „ „ „

Dr. Backhouse gave M. & B. 693 partly intramuscularly and partly by nasal catheter. Proom's method of estimating the drug was used, and Dr. Backhouse remarked that the concentration of M. & B. 693 seemed fantastically high, and he attributed that to the fading of his standards. The cultures took three weeks in transit but grew profusely when they arrived in England, and each showed the type-specific capsular swelling with serum type I. The sensitivity of these two strains was tested in vitro by the method described by Maclean, Rogers, and Fleming (1939): serial dilutions of pneumococcus culture were implanted into (1) equal volumes of M. & B. 693 1/10,000 and human defibrinated blood, and (2) equal volumes of normal saline and defibrinated blood; these mixtures were then placed in slide cells and incubated for twenty-four hours. These experiments were repeated many times with results such as are illustrated in the accompanying figure, which shows that strain 1 is much more sensitive to M. & B. 693 than in strain 2. Table II is a typical protocol of such an experiment and shows that the culture of pneumococcus derived from the patient just after the start of treatment was sensitive to 1/20,000 M. & B. 693—although not nearly as sensitive



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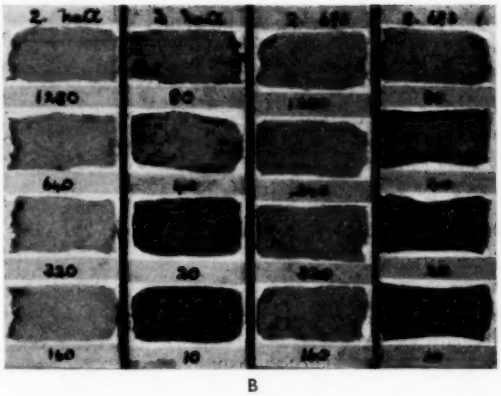

B

Sensitivity to M. & B. 693 of strains of pneumococcus from a fatal case of pneumococcal meningitis: (A) strain 1 from blood-culture made soon after start of treatment with M. & B. 693, showing sensitivity to the drug (compare especially 1/80 dilutions); (B) strain 2 from blood-culture made post mortem, showing tolerance to the drug. The numerals refer to dilutions of a twenty-four hours' broth culture.

as many pneumococci have been shown to be by Maclean, Rogers, and Fleming (1939)—but the culture taken after treatment and death was insensitive to this concentration of the drug. The number of pneumococci in each culture was practically the same.

TABLE II—SENSITIVITY OF TWO STRAINS OF PNEUMOCOCCUS TO M. & B. 693

Culture 1			Culture 2		
Implant	Survivors in saline	Survivors in M. & B. 693	Implant	Survivors in saline	Survivors in M. & B. 693
430	6	0	456	0	0
860	7	0	912	5	5
1760	11	0	1824	5	6
3440	44	10 minute	3648	12	36
6880	268	17 small	7296	31	33
13,700	∞	228 „	15,592	102	238

The growth of strain 2 showed no signs of "roughness," but, because McIntosh and Whitby (1939) have pointed out a correlation between roughness and tolerance to M. & B. 693, the virulence of the two strains was compared. Mice were injected intraperitoneally with increasing doses of pneumococci in saline. The results are given in table III, which shows that, although neither strain was very virulent to mice, their virulence was approximately equal.

SUMMARY

In a fatal case of pneumococcal meningitis treated with M. & B. 693 the culture of pneumococcus obtained shortly after the start of treatment was sensitive to M. & B. 693, whereas the culture obtained post mortem was insensitive. No great difference in virulence between the two strains was found, and the insensitive strain showed no indication of roughness and gave the Neufeld reaction with the appropriate type serum.

Although the organism first isolated was sensitive to M. & B. 693 and formidable concentrations of that drug were present in the body, a cure was not effected. It seems likely that the immunity of the patient was insufficient to deal with the pneumococci even when they had been exposed to a concentration of M. & B. 693 which originally affected them, and that after some three days' exposure to the drug the pneumococci had acquired a fastness to the chemical with the result that it no longer had any effect. If this is so, it emphasises the desirability of increasing the immunity at the same time that M. & B. 693 is administered, so that if possible the infecting cocci can be destroyed before they have had time to acquire a tolerance to the drug.

TABLE III—COMPARISON OF VIRULENCE OF TWO STRAINS OF PNEUMOCOCCI

Culture 1		Culture 2	
Infecting dose	Result	Infecting dose	Result
2,240,000	Death in 48 hours	5,600,000	Death in 36 hours
224,000	Death in 54 hours	560,000	Death in 60 hours
22,400	Survived	56,000	Death in 84 hours
2240	Survived	5600	Survived

My thanks are due to Dr. Backhouse, who provided the clinical details and cultures, and to Prof. Fleming for his generous advice and criticism.

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Clinical and Laboratory Notes

AGRANULOCYTOSIS FOLLOWING ADMINISTRATION OF M. & B. 693

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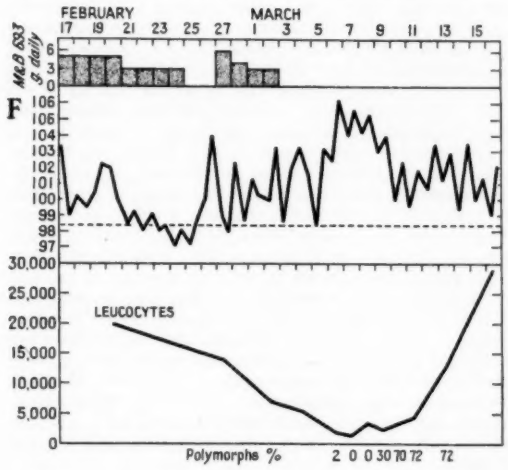
M. & B. 693 is being tested in Queen Charlotte's Hospital Isolation Block on behalf of the Therapeutic Trials Committee of the Medical Research Council. A full report will be published later, but in the meantime it seems advisable to call attention to the fact that agranulocytosis may occasionally arise in patients treated with the drug, just as it may with sulphanilamide. One case has already been reported from this hospital by Johnston (1938), and a second is described here.

CASE-RECORD

The patient was a primipara, aged 37, who developed fever twenty-four hours after a manual removal of the placenta and was admitted on the second day of the puerperium as a typical case of a heavy local infection with hæmolytic streptococci. The blood-culture was sterile. Her main complaint was severe headache. During her first eight days in hospital she was given 32 g. of M. & B. 693 by mouth, the drug being stopped when her temperature had been normal for forty-eight hours. Twenty-four hours later her temperature rose sharply to 104° F. and M. & B. 693 was recommenced. When the patient had had 40 g. in all the leucocyte-count was 14,700. Three days later, when 52 g. had been given, it was 7000. In view of this sudden fall the drug was stopped immediately, but in spite of giving Pentnucleotide and Campolon the count fell until it reached 1500 with no polymorphs. A transfusion of two pints of defibrinated blood was then given by the drip method. Two days later a leucocytosis was provoked in another donor by the intramuscular injection of 2 c.cm. veterinary nuclein; a pint of blood was then taken, defibrinated, and given by the drip method. On this day the patient's white-cell count showed a rise and a few polymorphs appeared. During the period of agranulocytosis the patient's general condition became grave with high fever and pulse-rate. Three blood-cultures at this time gave a growth of *Streptococcus hæmolyticus* group A, on one occasion no less than 5000 colonies growing from 1 c.cm. Two days after the second transfusion the white-cell count reached 4700 with 72 per cent. polymorphs. Thereafter it rose steadily until the patient developed a leucocytosis of 29,000. The blood-culture became negative but localised streptococcal abscesses appeared on her back. These were opened and have now recovered. The patient never had tonsillitis or hæmolytic streptococci in the throat.

A striking feature of this case was the severe headache of which the patient complained on admission and which persisted until her recovery from the agranulocytosis. A similar symptom had been noted by Johnston. Another point was the slowness of response to the drug. It was six days before the temperature came down and remained normal (see figure), whereas two or three days is the usual time.

So far two other cases of agranulocytosis following



treatment with M. & B. 693 have been reported in this country and one in America. Melton and Beck (1939) mention another case. All the reported cases had had large doses before the condition was discovered and the drug stopped. Thus Coxon and Forbes (1938) gave 54 g. in seventeen days when treating a case of typhoid; Barnett and his colleagues (1939) gave 80·9 g. in seventeen days; Johnston (1938) used 54 g. in eleven days; and my case received 52 g. in twelve and a half days.

It seems that quantities over 50 g. may be dangerous to patients who are already suffering from a disease which causes some destruction of blood-corpuscles. Lloyd, Erskine and Johnson (1938) report that patients treated for gonorrhœa have been given quantities up to 50–52 g. without obvious ill effects, but they have noted a slight but definite depression of the white count with polymorphonuclear leucopenia and lymphocytosis in a small proportion of cases. Tzanck et al. (1939) report a fatal case of agranulocytosis in a patient who showed an intolerance to other drugs and who had only been given moderate doses of M. & B. 693.

CONCLUSIONS

Agranulocytosis may arise after or during treatment with M. & B. 693. The white-cell count falls for two to three days after the drug has been discontinued.

A case of puerperal streptococcal infection showed an atypical response to the drug similar to that seen in cases of agranulocytosis during sulphanilamide therapy.

Though agranulocytosis may be suspected as the cause of a sudden deterioration in a patient's condition during treatment, it cannot be definitely diagnosed without a white-cell count. Frequent blood-examinations should therefore be made on all cases where M. & B. 693 is continued for more than a week and large doses are given.

I wish to express my thanks to Dr. Leonard Colebrook for his advice and assistance in preparing this paper, to Dr. E. D. Hoare for doing the blood-counts, and to the honorary staff of Queen Charlotte's Maternity Hospital for permission to report this case.

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AN AID TO PROSTHETIC RESTORATIONS OF THE MAXILLA AFTER EXCISION

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When the maxilla is partially or completely removed its restoration is often difficult, and similar difficulties may arise as the result of a palatal antrostomy. The collaboration of the dental surgeon in these cases is often of great value. The appliances that he may construct are of two classes—those inserted shortly after the operation, and those inserted at a much later date when healing is complete.

The appliances for immediate use are solely for the purpose of covering the communication that has been established with the oral cavity by the partial removal of the palate; these, worn only at mealtimes, enable the patients to eat with less discomfort, and are quite easy to make. The appliances of the second class present more difficulty in that they are required not only to assist eating but to replace the lost tissue and improve the appearance of the patient. If the case is one in which the lost tissue is solely palatal an appliance can easily be devised to make good this defect; but if there is also loss of bone of the outer and infra-orbital wall of the antrum, a more complicated problem arises. The restoration must not only cover the palate but must also support the cheek and eye from which the natural support has been removed. If the palatal opening allows the insertion of an appliance large enough to support these structures the restoration is comparatively simple. There are cases, however, in which the opening is too small, and since there is an obvious objection to further

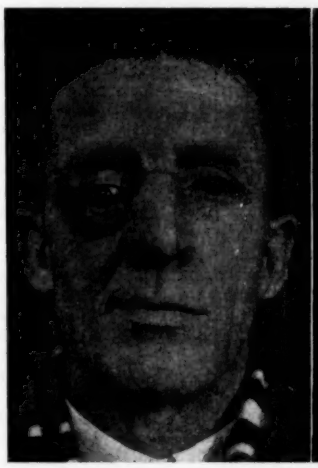


Fig. 1—Without support, showing dropping of right eye.

Fig. 2—With support, showing position of eye corrected.

operative measures at this stage the solution must be conservative. Some time ago a case of this type came under my care.

On Sept. 14, 1937, Mr. Lawrence Abel removed the right maxilla for a giant-cell tumour, the diagnosis having been confirmed by pathological examination. The patient made an uneventful recovery. On March 1, 1938, there was a further operation to increase the size of the aperture into the mouth, in the hope that it would be possible to insert an appliance to push up the eye, which had dropped down. The opening was made much larger, but it was found impossible to insert an appliance by this route. I therefore solved the problem in the following way. The palatal opening was first covered with a vulcanite obturator which was replaced after a few months by dentures, the patient being edentulous except for one upper left incisor. The mouth could now be regarded as satisfactory, and the collapse of the cheek had been improved as far as possible. The double vision had yet to be corrected, and this was definitely urgent. The patient had never required glasses, but I thought that normal vision might be restored by some support to the eye, and this support could most easily be attached to the framework of spectacles. Experiments on these lines at the Royal Dental Hospital were entirely successful, and I decided to transfer the patient to the Middlesex Hospital for the advice of Mr. Maurice Whiting, who was of the opinion that this support should have no harmful effect on the eye. Messrs. Curry and Paxton fitted the patient with plain glasses with an inconspicuous flesh-coloured support attached. The support was made of cellulose plastic and moulded to fit the concavity below the eye; it was then attached to the lower rim of the spectacle frame. The patient has now had these glasses for over six months; he has experienced no discomfort and the double vision is completely eliminated during the time that he wears them. This he does, however, only when he feels they are most needed, for it was feared that a long continuous pressure might have some harmful effect on the eye. Fig. 1 shows the eye without the support, and it can be seen that it drops considerably. Fig. 2 shows the position of the eye well corrected by the glasses.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

AT a meeting of this section held on May 17 Mr. C. H. S. FRANKAU, the president, read a paper on

Surgery in Old Age

Age, he said, is not merely a question of years but depends on degenerative processes associated with a diminished blood-supply. The saying that a man is as old as his arteries would be more accurate if it embraced the condition of the heart muscle. The influence of senile changes on prognosis and treatment could be considered under various headings.

Injury to the soft parts may be disproportionately serious in the aged. Severe bruises must therefore be treated with great caution: all pressure is to be avoided and after 24–48 hours, when capillary oozing has ceased, an electric pad applied intermittently is often of value; but fierce heat or cold—for example, an icebag—may precipitate skin gangrene. Open wounds are more liable to infection and healing is slow.

Fractures.—In the speaker's experience it is not true to say that fractures in old people unite but poorly or not at all—the exception being intracapsular fracture of the neck of the femur. Most cases of Colles' fracture will with careful reduction and immobilisation give a good and useful joint. In fractures of the long bones union is usually delayed but is eventually complete: one of his patients celebrated his ninetieth birthday with a Steinmann pin through the os calcis and a comminuted fracture of the upper third of the tibia, which united firmly in ten weeks. A fractured patella is often considered unsuitable for treatment in old people, but "why condemn a man of, say, 70 to the life of a cripple when removal of his patella will give him, as a result of a speedy and safe operation, a useful limb?" He had seen good results during the late war from removal of the patella shattered by gunshot. However another side of the picture was the unpredictable, and as far as he knew unexplained, phenomenon of "disunion" occurring some weeks after apparent healing of a fracture. In plaster treatment pressure sores over bony points (for example the styloid process in treatment of Colles' fracture) must be carefully avoided by adequate padding.

Massage, apart from being valueless, Mr. Frankau regards as dangerous to old people, owing to the liability to dermatitis which may lead to subcutaneous venous thrombosis.

Acute abdominal conditions.—He recognised two definite facts about acute appendicitis in old age. At one stage it may resemble intestinal obstruction of slow onset with an "acute indigestion" pain commonly referable to the epigastrium, rarely to the right iliac fossa, and a persistent pyrexia; physical signs are indefinite, the abdomen is distended, sometimes there is visible peristalsis and tenderness is general, often being greatest in the hypogastric and umbilical regions. At operation there is little peritoneal exudate, the intestines are sticky and red, and the infected appendix is rarely shut off by adhesions; these patients despite their age and the long duration of symptoms tolerate operation well. The other type of case presents "an acute attack of indigestion" followed by indefinite symptoms, inability to take food, constipation or diarrhœa, and a persistent slight pyrexia; examination, indefinite at first, later reveals a hard tender mass—an appendix abscess—in the right iliac fossa. The abscess formation is remarkably slow. As in all cases of appendix abscess, operation should be delayed until complete localisation is certain, and if the appendix is not found at once it should not be sought.

Surgery is not advisable for short attacks of biliary colic provided they are controllable by morphia and atropine, and provided the gall-bladder is not persistently distended; but if the attacks increase in frequency or severity, or if the gall-bladder becomes distended, operation is inevitable. Drainage of the gall-bladder is then preferable to removal except when it is literally "hanging by a pedicle." From one patient, a woman of 83, he six years ago removed a stone the size of a small lemon, draining the gall-bladder which was full of pus; the patient has since

remained well and survived the removal of a gangrenous appendix at 88. In old people the liver may drop and on two occasions (five years ago in one patient, now aged 87 and well) what appeared to be an appendix abscess proved to be an empyema of the gall-bladder low down in the right iliac fossa.

Carcinoma in old people usually progresses slowly with less tendency to disseminate. A small scirrhous carcinoma of the breast in a patient aged 75 who refused treatment had, when she died of bronchitis at the age of 81, grown to the size of a hazel-nut (double the original size) and was about to ulcerate through the skin; another patient, aged 76, after a lateral anastomosis for carcinoma of the splenic flexure which was producing intestinal obstruction, lived over six years with the growth untouched and without further symptoms referable to the abdomen. A woman of 87 with complete obstruction was treated by a cæcostomy, which subsequently closed, and an anastomosis of the lower part of the pelvic colon, and he went to a cocktail party given by her on her ninetieth birthday. For carcinoma of the breast in really old people local removal of the gland is generally adequate, and extensive radical operations are to be avoided; in the abdomen exclusion of a carcinoma of the colon by anastomosis is safer than excision, and for pyloric stenosis due to cancer of the stomach gastro-enterostomy is the most that should be done, gastrectomy being too severe.

Urinary tract conditions.—When cystitis and pyelitis are associated with obstruction, the latter must obviously be dealt with first; mandelic acid must be used cautiously if casts in the urine suggest renal degeneration. The risk of nausea and vomiting from sulphonamide drugs may be obviated by giving small doses of dilute hydrochloric acid after the drug.

Hernia.—A change from a smaller- to a larger-sized pad, by distributing the pressure over a greater area often allows an ill-fitting truss to be worn with comfort. Elastic bands are more comfortable than steel springs, although if the latter are essential the Salmon Ody type is preferable; a double truss should be fitted even though the hernia is unilateral. Some patients require a change of truss every two or three months. In an aged person a local mild operation is justifiable for an inguinal hernia which cannot be controlled by a truss, in order to reduce the size of the opening and allow a light appliance to be worn subsequently. Umbilical hernia in old people should be left alone.

Management of an operation.—Operation, unless of a life-saving nature, should be ruled out in patients with impaired renal efficiency, chronic bronchitis, or a flabby heart muscle. Rest in bed for some days previously is desirable, when fluid and glucose should be given up to the limit of tolerance (the intravenous route is best avoided owing to the risk of pulmonary œdema). Old people are not very tolerant of glucose, and glycosuria easily develops, so that a small dose of insulin is often advisable. Iodine may irritate and alcohol is a safer skin preparation. The ideal anæsthetic, in Mr. Frankau's opinion, is Avertin, with gas and oxygen, which appears to be safe at any age and gives adequate relaxation; if necessary a small amount of chloroform is probably a safer addition than ether. The uses of Evipan are limited, and spinal anæsthesia is unsatisfactory in old people. Postoperative basal collapse may be inhibited by inhalation of CO_2 and oxygen at regular intervals for 24–48 hours after operation; this applies especially to upper abdominal operations, but it is also valuable for fracture cases suddenly put to bed, and should be used much more often.

Despite every precaution however the patient often fades away after apparent success.

Although discussion of a presidential address was not strictly in order, Mr. Frankau asked for points of disagreement.

Mr. ZACHARY COPE said he thought a carcinoma of the stomach should be removed whatever the age of the patient. He had operated successfully on one patient aged 78 who died 2½ years later, and two other patients on whom he had operated were aged 76 and 74.—Mr. G. GORDON-TAYLOR, in moving a vote of thanks, said he believed a successful operation for strangulated femoral hernia had been reported in the United States at the age of 107.—Sir ALFRED WEBB-JOHNSON, seconding, maintained that a large open growth or ulcer on the body of the stomach should be removed if there is the slightest possible chance of success.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of pathology held on May 5, with Dr. R. A. Q. O'MEARA, the president, in the chair, Prof. JOHN MCGRATH opened a discussion on

Hæmoglobin Estimations

and the necessity for the adoption of a common standard. The estimation of hæmoglobin in the blood, he said, is often more important in diagnosis and prognosis, though less accurate, than the enumeration of the erythrocytes: in combination with the latter (the proportion being expressed as the colour-index) the estimation is essential for the proper study of any form of anæmia. There are many ways of estimating hæmoglobin; these comprise methods of determining the oxygen-combining power of the blood or the iron in the blood, and various colorimetric methods. The latter are almost invariably used clinically and in the usual hospital laboratory, a blood, coloured liquid, or glass standard being compared with a diluted solution of the blood to be examined; the hæmoglobin being usually transformed into one of its derivatives, commonly acid hæmatin. The amount or weight of hæmoglobin cannot be determined directly, and consequently where the utmost precision is necessary the oxygen-combining power of the blood or its iron content is determined. The most important function and property of hæmoglobin is its ability to combine with oxygen in the proportion of one molecule of oxygen to each atom of iron, and probably (as stated by Van Slyke) the best method of expressing the hæmoglobin content would be in terms of oxygen-combining power. The hæmoglobin per 100 c.cm. of blood may be calculated on the assumption that 1 g. hæmoglobin has an oxygen capacity of 1·34 c.cm.; this basis has proved difficult to determine exactly, but it is reasonably accurate and is generally accepted in practice. This method is, however, as yet unsuitable for clinical use. The iron content of the blood may be determined by one of several methods, notably those of Kennedy, Wong and Ostergood. The value of the hæmoglobin content may then be found, since hæmoglobin contains 0·0335 per cent. of iron. The latter figure, is, however, susceptible to the same degree of error as the oxygen-combining power.

The accuracy of these laboratory methods is amply sufficient to enable them to be used in the calibration of the colorimetric instruments which are used clinically. The simpler of these clinical methods have wide margins of error—up to ± 20 per cent.—but the better methods carefully used should have an accuracy of about ± 5 per cent.

DIFFERING NORMAL STANDARDS

Prof. McGrath pointed out that the various forms of apparatus used clinically employ different normal standards. The result is usually reported as a percentage of the normal, and the clinician has become accustomed to seeing and understanding this form of report. Furthermore, such a form is essential for the computation of the colour-index. The normal amount of hæmoglobin was formerly given as being about 14 g. per 100 c.cm. blood (Haldane), but this has been shown by various workers to be too low. It has been shown that in the adult, considered as being normal, the hæmoglobin-content varies from about 13 g. to 17·5 g. and even more extreme figures have sometimes been recorded. Following on these findings various instruments have been widely sold which are calibrated according to different standards. The normal of 100 per cent. varies in these instruments from 13·8 g. to about 17 g. Hb per 100 c.cm. blood. Usually reports are furnished giving the percentage of hæmoglobin based on these calibrations, and the actual amount of hæmoglobin corresponding to 100 per cent. is not stated. Published papers often contain figures which are of uncertain significance for the same reason: there is no foundation for the belief that the hæmoglobin figures in English publications are invariably based on the Haldane standard. It is not unusual, in Dublin and elsewhere, to see reports on the same blood by different pathologists which are not comparable because different standards are used to express the result. To give an example: let us assume a person with a blood of 2,500,000 red cells per c.mm. and a hæmoglobin content of 8·5 g. per 100 c.cm. blood. The pathologist with a hæmoglobin standard of 14 g. per 100 c.cm. blood will express this as Hb 61 per cent., colour-index 1·2; while his colleague with a standard of 17 g. per 100 c.cm. blood will express it as Hb 50 per cent., colour-index 1·0. Various workers, including Haden and Osgood, have suggested that, in order to eliminate this confusion, the amount of hæmoglobin should be reported in grammes per 100 c.cm. blood. This method would be quite excellent and reasonable, but clinicians have become accustomed to the expression of hæmoglobin in percentages, and again the colour-index should certainly be given in every case. It is, therefore, desirable that a standard normal value for the hæmoglobin content should be adopted and utilised in all reports, at any rate in this country.

METHODS OF DETERMINING THE STANDARD

One of two methods might be used to determine the standard. (*a*) The standard might be arbitrarily determined by a committee from the figures already published. The wide variation in the values found in "normal" adults must be regarded in the light of the number of erythrocytes present. The standard normal hæmoglobin should be taken as being the amount present in the blood of a normal adult with 5,000,000 red cells per c.mm. On this basis the variations of hæmoglobin in normal people becomes easier to understand. We see, for example, that if the normal adult with 5,000,000 red cells per c.mm. had (say) 14 g. Hb per 100 c.cm. blood, then a normal adult female with 4,500,000 red cells with exactly similar cellular hæmoglobin content would have 12·6 g. Hb per 100 c.cm. blood, and a man with 6,000,000 red cells would have 16·8 g. Hb per 100 c.cm. The standard normal adopted should, however, bear a reasonably close relation to the actual normal, if a high colour-index is to have its proper significance. There is good reason for believing that the red corpuscles are normally saturated with hæmoglobin: a colour-index above unity, therefore, should indicate increased average size of the cells, rather than supersaturation with hæmoglobin; the increased average "size" normally indicating increased average diameter. (*b*) The normal standard to be adopted might be determined as a result of investigation. Though such investigations have been made elsewhere, the correlation between height, weight, age, and the hæmoglobin and cellular content of the blood in normal adults in this country has never been critically investigated, and might be a suitable subject for research.

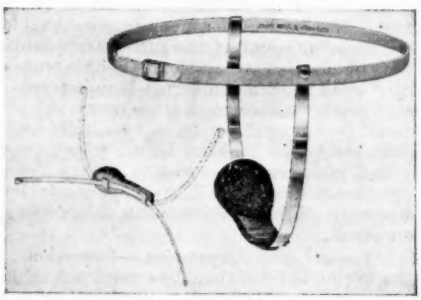
The adoption of a common normal standard for hæmoglobin would not make it necessary to discard the apparatus now in use: these could be calibrated and the results transposed to standard by the use of a factor.

NEW INVENTIONS

APPLIANCE FOR CONTROLLING PROLAPSE OF THE RECTUM

FOR an advanced and inoperable case of prolapse of the rectum the appliance illustrated here has distinct advantages over the usual non-rigid sling and pad and was found to be very satisfactory in practice.

The appliance consists of a narrow elastic or webbing belt, a strip of thin, flat, spring steel which



is hooked at either end to take the belt, and a cone-shaped pad made up of layers of Sorbo rubber on a backing of firm leather.

Two leather slings attach the pad to the spring and allow of sliding adjustment backwards and forwards. The rigidity and flatness of the spring hold the pad in position more firmly than does a non-rigid appliance and there is little tendency for the prolapse to escape past the side of the pad. In addition, the shaping of the steel spring holds it clear of the body and avoids the "cutting in" which is a source of discomfort when a non-rigid sling is tightly braced.

The appliance was made for me by Messrs. John Bell and Croyden, Wigmore Street, W.1.

G. F. GRANT BATCHELOR, F.R.C.S.
Surgeon to West London Hospital.

REVIEWS AND NOTICES OF BOOKS

The Practice of Medicine

(2nd ed.) By JONATHAN CAMPBELL MEAKINS, M.D., LL.D., professor of medicine and director of the department of medicine, McGill University; physician-in-chief, Royal Victoria Hospital, Montreal. London: Henry Kimpton. 1938. Pp. 1413. 50*s*.

Prof. Meakins is a modern physiologist-physician. As physiologist he believes that there is "a true basis for conclusions in all abnormal processes in living man, if we know enough properly to evaluate them." As physician, he aims at being "a combination of a confessor, a judge, a counsellor and, above all, a friend." In his presentation of medicine, pathology is no longer just the pathology of the post-mortem table; it is the pathology of the living, which means the disturbance of physiological processes produced by disease, traced through the days or months or years that disease may last. He is conspicuously interested in the mechanism and significance of signs and symptoms. That is the keynote of this text-book, whose second edition, duly brought up to date, we are glad to welcome; 500 illustrations, chosen to amplify descriptions of less common rather than of everyday conditions, are among its valuable features.

Iodine and the Incidence of Goiter

By J. F. MCCLENDON, professor of physiological chemistry, University of Minnesota. London: Humphrey Milford, Oxford University Press. 1939. Pp. 126. 22*s*. 6*d*.

Schilddrüse, Jod und Kropf: Klinische und experimentelle Untersuchungen

By M. SAEGESSER, Bern. Basel: Benno Schwabe and Co. 1939. Pp. 163. Swiss Frs.10.

THESE two books present an interesting contrast in methods of attacking the same problem. Although the validity of the hypothesis relating iodine deficiency to the occurrence of endemic goitre must be regarded as settled in broad outline beyond all reasonable doubt, the precise rôle of iodine in other forms of thyroid disease is by no means so clear, and even in relation to simple goitre there still remain points to be explained.

The book of Prof. McClendon will be universally welcomed; it carries with it the authority of a worker whose own contribution to the goitre problem is recognised all over the world, and it provides for the first time a concise but comprehensive summary of the great mass of analytical work which alone has provided a secure foundation for the accepted theory of the ætiology of goitre. The cumulative evidence afforded by this summary can leave no doubt in the mind of the most sceptical reader as to the primary ætiological importance of environmental iodine. It has not been sufficiently realised that the accurate determination of small amounts of iodine is a very difficult chemical operation, and many studies have been undertaken by workers little qualified for experiments of this nature. In a compilation as comprehensive as this the author is compelled to include figures that are open to grave doubt; such doubt appears to arise especially in connexion with the analysis of animal organs and body fluids, and the sections dealing with these subjects might well have been prefaced with the illuminating results of the analysis of the same sample of blood in different laboratories which is referred to in the section on the determination of iodine. The discriminating reader will, however, be able to sift the wheat from the chaff, and will find this not only a valuable work of reference but instructive and suggestive reading.

Dr. Saegesser's monograph is mainly an account of his own researches into the relation of iodine not only to simple goitre and cretinism but to conditions of hyperthyroidism. The problems have been attacked by the experimental method, the main subject of study being the variations in iodine metabolism which are associated with pathological states of the thyroid. Particularly interesting are the results of iodine-feeding experiments which lead the author to conclude that the fundamental biochemical lesion both in hypo- and hyper-thyroidism is a disturbance in the total metabolism of iodine in the body—total metabolism including rate of excretion, mobilisation of iodine from extra-thyroidal tissues and equilibrium between iodine and active thyroid secretion. Dr. Saegesser's arguments are not always easy to follow, but his experimental results are suggestive and are worthy of careful consideration.

Dental Surgery and Pathology

(7th ed.) By J. F. COLYER, K.B.E., LL.D., F.R.C.S., L.D.S., consulting dental surgeon to Charing Cross Hospital and to the Royal Dental Hospital, London; and EVELYN SPRAWSON, M.C., D.Sc., M.R.C.S., L.D.S., dental surgeon and lecturer in dental surgery and pathology to the London Hospital. London: Longmans, Green and Co. 1938. Pp. 1067. 35*s*.

THIS book has been the mainstay of generations of students and has many merits. The teaching is simple, clear and forcible, the selection of matter is on the whole good and the illustrations are excellent. The chapters on dental caries still strike us as being disappointing and inadequate. The reference to the researches of Lady Mellanby is far too brief, and the Birmingham experiments on prolonged feeding of groups of children on various diets are not mentioned. Bunting's work only gets a few lines. We appreciate the difficulty of preserving a balance in a book which purports to cover the whole field of dentistry, but the caries problem is so important that it would have been better to have given more space to it at the expense of some other subjects. Odontomes, for example, need not have been given so much prominence in a book of this kind, the over-ingenious classification is likely to perplex rather than aid the student. The section on radiology by Stanley Colyer is very good and the illustrations are really fine. That on parodontal disease is also good, but the work of Gottlieb has been omitted. The chapter on fractures of the jaws still seems to be written in terms of war injuries. Interdental wiring, now used by many dentists with great success, is not mentioned, while the obsolete Hammond splint still finds a place. The chapter on the remote effects of disease about the teeth, by Martin Rushton, is well set out, judicial in tone and summarises with much skill current opinion on dental sepsis and its sequelæ. This edition is bigger by 150 pages than its predecessor, issued seven years ago, and is in danger of getting too bulky for convenient handling, though the format is satisfactory and the print easy to read.

Modern Surgical Technique

By MAX THOREK, M.D., professor of clinical surgery, Cook Graduate School of Medicine. London: J. B. Lippincott Co. 1938. Pp. 2045 (3 vols.). £7 10s.

THIS treatise comes from the surgical clinic of an important hospital serving the needs of a large industrial city, and it sets out to give up-to-date and practical instruction in the operations of surgery. It succeeds to the extent that the classical operations —the ligature of arteries and the standard amputations—are clearly described and well illustrated, and that a senior surgeon who has the experience to pick out what he needs from a great deal that is irrelevant, or even incorrect, will find much to interest him in the rest of its pages. But in its present form it cannot be recommended to any of the various classes of reader who would be likely to turn to a work of this size. The author describes in detail methods of minor importance and fails to offer the surgeon help on the performance of difficult operations where practical guidance would be welcome. In various places the methods advocated have been practised in European clinics but are practised there no longer; some of them have almost been forgotten in the clinics where they originated. The author has the services of first-class illustrators and with adequate revision the book could still be made to fill the place it ought to occupy.

Refraction of the Eye

(2nd ed.) By CHARLES GOULDEN, M.D. Camb., F.R.C.S., ophthalmic surgeon to the London Hospital and surgeon to the Royal London (Moorfields) Ophthalmic Hospital. London: J. and A. Churchill. 1938. Pp. 271. 12s. 6d.

To many practitioners and some ophthalmic surgeons whose interests lie in other directions the mathematical aspect of optics is irksome and difficult, but a thorough knowledge of principles is essential to a grasp of refraction and to the study of the eye as an optical apparatus. Mr. Goulden has succeeded in making his section on optics no less lucid and interesting than the more clinical parts of his book and has included all that an ophthalmologist need know about refraction. The book is mainly written around lectures given to students attending the D.O.M.S. course at Moorfields, and pays especial attention to methods of examination in common use. The whole work has been carefully revised, but there are no fundamental changes in this second edition apart from the account of Fincham's researches on accommodation and the rôle of the lens capsule.

Yearbook of General Therapeutics

Edited by BERNARD FANTUS, M.S., M.D., professor of therapeutics at the University of Illinois college of medicine; and AARON L. GOLDBERG, M.D., assistant in the medical dispensary at the university. Chicago: The Year Book Publishers; London: H. K. Lewis and Co. 1939. Pp. 544. 10s. 6d.

THERE are 474 abstracts in this volume, which is bigger than any of its predecessors and covers the literature from about the middle of 1937 to September, 1938. Sulphanilamide in its many aspects and uses of course bulks large, and there is evidence of an ominous wave of interest in blood-transfusion and the storage of blood. Protamine zinc insulin is fairly fully considered, and so is the shock treatment of psychoses. The book includes new and more precise information on the therapeutic use of sex hormones and certain vitamins, a number of papers on benzedrine, and a host of recommendations and reports on less widely known new treatments, with a section on local and general anæsthetics. The abstracts follow their usual principle of giving full details and of concerning themselves mainly with procedures applicable in general practice.

Quarterly Journal of Medicine

THE April issue contains the following papers :—

BENIGN BRONCHO-PULMONARY INFLAMMATIONS ASSOCIATED WITH TRANSIENT RADIOGRAPHIC SHADOWS. By Hugh Ramsay and J. G. Scadding (Tuberculosis Dispensary, Walthamstow, Essex, and British Postgraduate Medical School). Twenty-nine cases meriting the above description are analysed. Four were examples of unresolved classical pneumonia, the earlier acute symptoms of which were typical. Four had bronchitic symptoms, and shadows characteristic of lower-lobe atelectasis. The remaining twenty-one had basal shadows suggesting small areas of consolidation, disappearing within a few weeks, and not associated with the toxæmia of classical pneumonia; the symptoms were catarrhal, sometimes with pleuritic pain or bloodstained sputum. The lesions are thought to be areas of aspiration pneumonia; they are common and have been described by many previous writers; their differentiation from tuberculous lesions is important. The authors recommend for them the name "benign circumscribed pneumonia."

HEREDITARY ECTODERMAL DYSPLASIA OF ANHYDROTIC TYPE. By P. C. C. de Silva. Four cases are described, from Ceylon. Deficiency in number and development of teeth, hypotrichosis, and absence of sweating and of sweat glands are the principal and characteristic features. Cases already reported are reviewed. The condition is sex-linked and incompletely recessive.

THE SECRETIN TEST OF PANCREATIC FUNCTION. By Henrik Lagerlöf (St. Erik's Hospital, Stockholm). Chemically pure secretin is injected intravenously. Duodenal content is aspirated for an hour through a special double tube which avoids admixture with gastric content and saliva. Bicarbonate, diastase, trypsin, and lipase are estimated. In acute pancreatitis, enzyme secretion (especially that of diastase) is diminished, with little change in the volume of pancreatic juice or its bicarbonate content. In obstructive lesions, and in chronic pancreatitis and carcinoma, all the components of pancreatic secretion are reduced in amount. The test throws light on the regulation of pancreatic function and is of differential diagnostic value—e.g., in distinguishing idiopathic steatorrhœa from chronic pancreatitis.

STERNAL PUNCTURE IN THE DIAGNOSIS OF DISEASES OF THE BLOOD-FORMING ORGANS. By Ronald Bodley Scott (St. Bartholomew's Hospital). This is a detailed analysis of the findings in sternal-marrow films in 6 normal subjects and 250 cases of disease of the hæmopoietic system. Sternal puncture is of greatest diagnostic value in obscure cases of "liver-deficiency" anæmia, in subleukæmic and aleukæmic leukosis and in myelomatosis. The author is among those who regard the megaloblasts dominating the marrow-picture in addisonian anæmia as abnormal cells; on this view the pathogenesis is not to be described simply as an arrest of maturation of normal cells due to lack of a nutritive principle, but rather as a hyperplasia of primitive dysplastic erythroblasts histologically analogous to leukopenic myelosis.

THE AGGLUTINATION OF SUSPENSIONS OF VIRUS-LIKE PARTICLES PREPARED FROM EXUDATES IN ACUTE RHEUMATIC FEVER. By G. Hardy Eagles and W. H. Bradley (Lister Institute and Department of Medicine, Cambridge). Agglutination was brought about by about 40 per cent. of sera from cases of rheumatic fever, rheumatoid arthritis, and miscellaneous arthropathies. It occurred with the same frequency in each group. It showed no correlation with the activity of the disease, the clinical evidence of streptococcal infection, the antistreptolysin titre, or the red-cell sedimentation-rate. It is believed to have some significance, since it does not occur with normal sera, but the nature of this is still obscure.

THE LANCET

LONDON: SATURDAY, MAY 27, 1939

INFECTION AT OPERATION

NOWHERE does the new student find medical tradition more formidable than in the operating-theatre. The rigorous discipline there enforced is based on the idea of operative infection as a mortal rather than a venial sin. Hence it is disconcerting to find that we have lately published not one but a succession of independent papers revealing gaps in the aseptic barrier, and proving that the amount of infection at operation is not negligible even today; while our correspondence columns have contained serious criticisms of the sterility of dressings. The accumulated evidence is too weighty to neglect, and the recommendations cannot be dismissed by talking about "counsels of perfection." In some large hospitals strict records are kept of the individual sepsis-rates of surgical firms, and if this wise practice were more widely followed the figures might well be surprising. In a small but detailed investigation Mr. DEVENISH and Prof. MILES [1] found that roughly 1 in 4 of one surgeon's cases became infected, whereas a second surgeon's figure was 1 in 41. In our present issue Prof. CAIRNS shows that in a clinic for cranial surgery no less than a quarter of a year's postoperative deaths were attributable to infection. An important distinction that emerges is that in CAIRNS'S series, involving protracted operations, many types of organisms, including a dysentery bacillus and bacteria of minimal virulence, were isolated, whereas in the series investigated by DEVENISH and MILES *Staphylococcus aureus* was almost the only one found. This distinction must be emphasised, because the improvements in anæsthesia and surgical technique, by lengthening the average time taken for operations, make it essential to study surgical statistics as a whole if the aseptic procedure is to be criticised. Prof. LERICHE in his Lister lecture [2] drew attention to the wider aspects and remote results of operative infection; phlebitis, pulmonary embolism, adhesions, keloid scars and recurrent infections are all possibly related to bacterial contamination of operation wounds.

Our various contributors give their views on the source of infection. DEVENISH and MILES make out a good case for infection from the surgeon's skin; and their paper would be remarkable if it did nothing more than record their finding that up to 24 per cent. of gloves were punctured at operation. LERICHE was chiefly concerned with air-borne germs, while CAIRNS casts a wider net, and writes also of droplet infection, water infection, and auto-infection. We hope that his review will point the way to an even more elaborate study by a competent committee, for neither surgeon nor bacteriologist alone can be expected to say the last word on the whole subject. There are many practical questions to be answered. For instance, is it impossible to provide a satisfactory glove with a thin fabric exterior and rubber lining—a better quality of the kind worn by housewives? Many pathologists use a cotton glove on the left hand to avoid post-mortem wounds, and it certainly helps to prevent glove punctures. Should not dressings be impregnated with a bacteriostatic agent? Are masks all that can be desired? An ineffective mask will actually accumulate organisms, and then discharge them in bulk on talking or coughing, and though a Cellophane mask is effective it causes dimming of spectacles. Again, ought we to bother about air sterilisation? HART [3] in America believes in it strongly, whereas DEVENISH and MILES doubt its importance; they calculate that only 11 organisms per hour will be introduced into a wound. In HART'S clinic an incidence of 33 per cent. of post-operative infections was lowered to 3·8 per cent. by the use of ultraviolet light; previously, rigid precautions such as masking, wall-painting and air-conditioning had been ineffective. LERICHE is likewise convinced that air sterilisation is possible, and greatly to be desired, and many surgeons in every country are in agreement. TRILLAT'S work on aerosol sterilisation of air was described in a paper in our pages recently by PULVERTAFT and his co-workers [4] and phenol vapour has been used and recommended for a similar purpose. The surgeon who decides to sterilise the air of his theatres has plenty of effective methods at hand.

It appears that, after a long period in which surgeons have been rather too easily satisfied with their aseptic technique, our practice if not our principles must be reviewed. Sepsis-rates involving a quarter to a third of the patients; mortality-rates due, in a quarter of the cases, to infection; gloves and masks with which the surgeon emulates the ostrich; dressings that contain tetanus spores; talc that is difficult to make innocuous; needles and syringes often inadequately sterilised; and the circumambient air, capable perhaps of bringing disaster when everything else is satisfactory—these are facts that must make the conscientious operator reflect. The problem has at least been exhaustively stated. That there should be a problem at all is perhaps a consequence of unwise separation after the marriage between surgery and bacteriology which made modern surgery possible. It is time, we suggest, for a restitution of bacteriological rights.

1. Devenish, E. A., and Miles, A. A., *Lancet*, May 13, 1939, p. 1088.
2. Leriche, R., *Ibid*, April 8, 1939, p. 803.
3. Hart, D., *Arch. Surg., Chicago*, 1938, **37**, 956.
4. Pulvertaft, R. J. V., Lemon, G. C., and Walker, J. W., *Lancet*, Feb. 25, 1939, p. 443.

PURPOSES OF PUNISHMENT

"Discontent," said Rasselas, "will not always be without reason under the most just and vigilant administration." Proud as we may be of the British administration of criminal justice, we are sometimes surprised by the consequences of its characteristically national system of compromises. While the police forces and the director of public prosecutions strain every nerve to bring the criminal to justice, the law-courts put obstacles in their way. Prosecutions must be conducted with restraint; rigid rules of evidence must be observed; the accused must have a sporting chance. The victories of British justice, in fact, have been won on the playing-fields of Eton. Twice in the present month men who have killed women have been mercifully found guilty of manslaughter because the fact that they had previously committed similar crimes had to be kept from the jury till after the verdict. A juryman must often be amazed that he is not allowed to have the very information that would most influence his decision. The effect is that these offenders commit "manslaughter," go to prison, come out, and do it again. If the object of punishment is preventive, it is not being achieved; the community is not being protected, for the multiple offender, whether in homicide or house-breaking, is not detained till he is socially safe. If the object is reformatory, there is the like failure. Are we still working on the retribution theory or what other principle governs our penology?

Fresh in the memory are the heavy sentences passed on the misguided Irishmen who think that bombs are the best means of commending to the English public a particular view of Irish nationalism. What is the exact purpose of the long terms of imprisonment passed in such cases? If punishment is meant to be preventive, the right procedure one would suppose would be to ensure that these men are kept out of mischief until the situation—or their opinions—shall have changed and the public safety is assured. To assign "twenty years" to one and "two years" to another may be an index of the indignation aroused by the particular prisoner, but it is hard to see any sounder reason for it. If neither the tradition of English courts nor the present state of public opinion yet favour the indeterminate sentence, a time may well come when reformers will persuade us of its practical necessity. A complementary extension of supervision after discharge from prison might do something to reconcile the principles of individual liberty and public safety. The present graded tariff of penalties for offences seems often unsatisfactory for the hardened recidivist as well as for the juvenile offender, and for both of them a vaguely lengthy course of enlightened institutional care and after-care may prove to be the best remedy.

Sir ALEXANDER MAXWELL, the permanent under-secretary of state at the Home Office, spoke lately of the two schools of criticism. The danger with which society was faced in the treatment of crime, he said, was that of unscientific and sentimental assumptions. There were not only the tender-minded sentimentalists; there were also the tough-minded sentimentalists, so eager for the suppression of crime that they insisted on the "strong" policy, even though in this or that type of case the policy had been proved useless. We have all been made aware by certain foreign examples that the maxim *salus populi suprema lex* can lead to the dangers of dateless disappearance within the fences of the concentration camp. Perhaps, however, even such institutions might seem less abominable if we had confidence in the motives and character of those in charge of them; and the governments concerned do at least seek to justify their method by relating it to some rational basis. Our own system, if system it can be called, seems to arise from a muddled compromise between vengeance, deterrence and remedial treatment. In fact, to foreigners who inquire what is our theory of criminal justice we can only reply that, as usual, we have no theory at all.

THE PRESENT POSITION OF DENTISTRY

ON May 10 Sir FRANCIS ACLAND presided for the 34th time at the Dental Board of the United Kingdom—he has missed only two sessions since the board was set up. It was in June, 1916, after the memorial service to Lord KITCHENER, that Sir ALMERIC FITZROY, then clerk to the Privy Council, asked him to preside over a committee to investigate the extent and gravity of the evils of dental practice by persons not qualified under the act of 1878. On the report of that committee was based the Dentists Act of 1921, and when the Dental Board was constituted Sir FRANCIS became its chairman. "The lay stop-gap," he remarked, "can step out now with a good conscience and make way for a member of the profession." His farewell was affectionate on both sides.

Most of Sir FRANCIS ACLAND'S last address was occupied with a survey of the present position of the dental profession. The Dentists Register now contains 14,400 names and is likely for some time to remain steady at that figure; so the fifteen-year period 1928–42 will begin and end with the same number of dental practitioners. But there is a difference in quality, for now there are nearly 8500 graduates and licentiates against 6000 who are qualified by experience alone. Rather surprisingly there are still 199 hardy veterans registered under the act of 1878, who thus appear to have been in practice for at least sixty-two years. The situation in general gives the retiring chairman some concern. It is admitted that during the last twenty years the demand for dental surgeons has much increased. Ten years ago there were 480 school dental officers; now there are 800. The recent valuation of approved societies has entitled at least two million more insured persons to dental benefit. Each of the three service departments is requiring more dentists; in the Army Dental Corps, for example, the establishment of officers has increased by 30 per cent. in the last eighteen months. And finally the public demand for dentistry has increased as a result of health propaganda. The Dental Board, however, has not been

able to do as much as its chairman would have wished to enlighten the public about the good that dentists can do them. Six full-time demonstrators work in schools or at health-weeks, 50 copies of nine films are in constant circulation, and some 200 lectures a year are given in schools and factories; but to produce any considerable effect tens of thousands of pounds would, he thinks, have to be spent on public posters and press announcements. To meet this need Sir FRANCIS foreshadowed a scheme under which propaganda services might be expanded by collecting a large sum of money from firms which advertise dental requisites as well as from the dental profession itself.

In the meantime the dental graduates are absorbed into practice as soon as they appear. There is no unemployment. Dental practitioners seek assistants in vain, and the competition for public appointments is poor. That is the position of the dental profession as Sir FRANCIS ACLAND leaves the chair, and there is no-one who has done more than he to raise its status. His doubt whether the numbers are sufficient to meet future needs should command attention.

PIGS, WORMS AND INFLUENZA

SWINE-INFLUENZA is a disease prevalent in the middle western United States every winter. It was shown by SHOPE [1] that two agents are necessary for its development, *Hæmophilus influenzæ suis* (a close relative of Pfeiffer's bacillus) and the swine-influenza virus. This last was later found to be related to the virus of human influenza. The pig disease spreads readily by contact during the winter, but disappears during the summer; during that period the presence of the virus in the herds has not been detected. SHOPE [2] has now obtained evidence suggesting that in interepidemic periods the virus may persist in lungworms, of which two species regularly infest pigs in the middle west.

These worms, *Metastrongylus elongatus* and *Chærostrongylus pudendotectus*, inhabit the bronchioles at the base of the pigs' lungs; embryonated ova are passed in the fæces and are duly ingested by earthworms, in which they hatch and develop; after weeks or years the earthworms may be eaten by pigs, and the liberated lungworms will then find their way to the pigs' respiratory tracts. SHOPE took fæces and bronchial exudate containing lungworms and their ova from pigs ill with swine-influenza; he then fed this material to earthworms, and after periods of 1–3 months gave the earthworms to pigs to eat, in hopes that these would then go down with swine-influenza; but nothing happened. Undismayed by this failure, he persevered and he was later able to show that influenza—proved genuine by the recovery of virus—could regularly be induced by intramuscular injections of *H. influenzæ suis* into pigs previously fed with infected earthworms. The first injection of the bacteria, however, never gave rise to influenza; it appeared that the pigs had first to be sensitised to the organism, when a subsequent injection would lead to the results described. Injections of the hæmophilus into pigs not fed with infected earthworms never produced influenza; nor did this follow ingestion of infected earthworms without the provocative injection of bacteria. Why this sensitisation and provocation were necessary is quite obscure, but it is probable that the rôle of the *H. influenzæ suis* is non-specific in this type of experiment, since SHOPE has succeeded in producing influenza by a single intrapleural injection of calcium chloride into suitably prepared pigs.

Proof that a virus can be carried in an intermediate helminth host during interepidemic periods would give epidemiologists and students of other virus-diseases much food for thought. The importance of the possible inferences makes it necessary that SHOPE's experiments should be studied critically and repeated carefully. It is unfortunate that he has so far been unable to demonstrate virus directly, either in presumably infected earthworms, or in the lungworms of swine thought to be ripe for provocation; such findings would prove his case conclusively. The necessity for a rather roundabout method of proving infection of the worms calls for particularly elaborate controls, satisfactory as these have been so far. What may seem to be a weakness in SHOPE's case may, however, turn out to be its most important feature. His own work with the rabbit papilloma [3] revealed that a virus may be present in the lesions it is causing without being directly demonstrable by transmission experiments. Such a finding with a virus not of the tumour-virus sort would be a substantial extension of our knowledge. These results with swine-influenza may well prove important for epidemiological studies in America, and may give a clue to the distribution of the disease in other countries. While they make us speculate once more where human influenza virus persists in interepidemic times, knowledge of human parasitic helminths does not render it very probable that the results will be directly applicable to the disease in man. Yet human influenza virus is being shown in the laboratory to be capable of infecting more and more animal species; some of these and their helminth parasites may one day be shown to come into the picture.

1. Shope, R. E., *J. exp. Med.* 1931, **54**, 373.
2. Shope, *Science*, May 12, 1939, p. 441.
3. Shope, *J. exp. Med.* 1937, **65**, 219.

"... The recent legislation to restrict the activities of bucket-shops, although admittedly needed for many years, only came about through a succession of scandals too widespread to be ignored. The patent medicine restrictions in America were similarly forced on the Government by a series of appalling cases of fraudulent misrepresentation and criminal carelessness, culminating in the death of seventy-three people from a new drug which was put on the market without being tested, and which proved to be highly toxic. The patent medicine traffic is more dangerous to the country than the bucket-shops, and the facts are beyond dispute. Yet it seems we must wait until some tragic occurrence shocks public opinion from its apathy before the Government will think it worth while sparing a few hours of their time to pass legislation without which the efforts of the Ministry of Health to improve the physical well-being of the nation have no real basis."—Prof. E. C. DODDS, *Middlesex Hosp. J.* May, 1939, p. 77.

ANNOTATIONS

IN MEMORY OF SIR SQUIRE SPRIGGE

A FUND for the endowment of scholarships for the education of orphan girls of medical parentage, opened last week by the Medical Insurance Agency at its annual meeting, is to bear the name of Squire Sprigge, editor of this journal from 1909 to 1937. It will be recalled that the agency was the creation thirty years ago of the then editors of the two leading medical weeklies. Sir Dawson Williams has been commemorated by the foundation of a scholarship for boys which bears his name, tenable at Epsom College; the agency supplied the funds for this endowment, now completed by instalments spread over a period of six or seven years. A similar endowment, this time for the education of girls, is to be built up as a memorial to Sir Squire Sprigge, whose family concur in the view that it was a cause he had deeply at heart. For many years the Medical Insurance Agency has advised members of the medical profession how to insure their lives and their effects to the best advantage, and the profit of this collective insurance has, after allowing clients a substantial rebate on their premiums, liberated a large sum of money for the support of medical charities. In establishing the Sprigge fund the agency has voted an initial instalment of £2100 for girls' scholarships. The administration of the fund will be placed in the hands of Epsom College, which already awards fifteen or sixteen St. Anne's scholarships (for girls) under a bequest of many years' standing. The selection of the beneficiaries will be in the hands of the conjoint committee of the college, which consists of ten members nominated by its council and ten others nominated by various medical bodies from different parts of the kingdom. It is understood that it is in the minds of the committee of management of the agency to build up the fund as occasion permits to a total at least as great as that of the Dawson Williams fund; and in view of the much larger endowments existing for male than for female orphans, there seems to be a case for going even further in this direction.

WEAK BACKS

ACCORDING to Knudsen,[1] who has examined some 40,000 backs in the last six years, a normal back is one in which, when the arms are stretched well up and carried backwards, a straight furrow runs from neck to sacrum, slightly deeper in the sacral region; and when the examinee stoops to touch his toes, the curve is completely even. Any commencing deformity arising from localised loss of mobility will show as a partial disappearance of the furrow, or an unevenness of the curve. Anyone who has examined schoolchildren in this country will be familiar with these patches of rigidity in weakly, stiffening backs that appear normal to the casual eye. In an article on the infant's back last year Knudsen [2] suggested that allowing an infant to sit up too early may lead to a kyphotic yielding of the spine at or near the dorso-lumbar junction. The abnormality may set and be retained in adult life, as Knudsen again points out when he deals with older backs. This upper lumbar "sitting kyphosis" can probably arise in young children as well as infants, for it is common in schoolchildren in this country. One likely reason is the vogue for cross-legged seated positions in gymnastic lessons, aiming at counteracting the formerly prevalent lordosis. This position, in addition to school-seating, wearies a weak and growing back and allows it to sag at a mechanically weak part. The long round back, in which the normal lumbar curve is obliterated and there is the lowest possible compensatory lordosis at the fifth lumbar vertebra, is another weak type often found in adolescence. This kind of back Knudsen finds is usually mobile, and if the muscles are called into action and a strong "stretch" position taken a good posture may be attained. The short round back with its accompanying strong lordosis is often rather sturdy and stiff, and can even be found in a muscular labourer. In the test positions the upright furrow is absent in the dorsal region and accentuated in the lumbar, and on flexion the lumbar region does not curve but remains board-like. A less rigid form of this type is not infrequent at school age. The abnormally straight back, probably more common in the "back-board" days and sometimes produced artificially by training, lacks, as Knudsen says, the suppleness and strength of the normal back, and indeed loses the whole mechanical advantage of the normal curves.

1. Knudsen, K. A., *Ugeskr. Laeg.* April 27, 1939, p. 524.
2. *Lancet*, 1938, **2**, 406.

STORY OF MEDICINE STAMP DUTIES

RESISTANCE to the proposal to annul the medicine stamp duties may be offered when the relevant clause in the Finance Bill is reached in the House of Commons. The first item in the schedule of twelve enactments relating to the duties that the clause seeks to repeal is the Medicine Stamp Act, 1802. It should be noted, however, that the statute first embodying the principle upon which the duties are based was introduced in the Medicine Stamp Act of 1783; that act was replaced by another two years later and was repealed by the act of 1802. In attempting to understand the motives prompting the legislature of 1783 to single out medicines and impose upon their retail sale a restraint in the form of taxation it is necessary to look back at the conditions of the time.

The wars with France, Spain and America were over; the treaties of Paris and Versailles had just been concluded; and Parliament set to work to find the means, a colossal sum in those days, to pay for the indiscretions of George III's advisers. Cavendish, chancellor of the exchequer in the coalition ministry of Fox and North, explained his financial proposals on May 26, 1783; one of them was to place a tax on medicine which he estimated would yield £15,000 in a full year. Events showed that this was an over-estimate, but even had the full amount been collected it would have been a mere drop in the ocean of money needed by the state at the time. The very smallness of the sum that the chancellor expected to obtain from the tax on medicines suggests that had revenue been his main object he would have chosen a wider range of commodities for his purpose. This view is supported by the fact that medicines sold by persons who had served a regular apprenticeship to a surgeon, apothecary or druggist were specifically exempted from the tax, and persons in the category indicated were not required to take out the vendor's licence. If, then, revenue was not the chancellor's object, was it not to encourage the public to buy their medicines from trained vendors and to discount those gross forms of quackery that were prevalent at the time and had led a contemporary writer to call England the "paradise of quacks"? Parliament

had recently voted £5000 to a Mrs. Stevens for a solvent for stone—notwithstanding which, as William Wadd observed some years later, "there have been as many human calculi since formed by his majesty's liege lithotomical subjects as would macadamise one side of Lincoln's Inn Fields." Oliver Goldsmith, who had poured ridicule on the quacks as no writer has ever done or could do, had not long been dead and the celebrated Samuel Jessop who in 21 years swallowed 226,934 pills besides 40,000 bottles of medicine was still alive. Is it not probable that Cavendish meant to make no more payments to the likes of Mrs. Stevens and meant to protect the likes of Mr. Jessop from their folly?

Since the first act of 1783 legislation still maintaining the principle that the proper vendor of medicines is the trained vendor has been in force; the signpost erected by the chancellor of the exchequer in 1783, pointing the way to the trained vendor, has been repainted time after time; yet now another chancellor is proposing to take it down.

COWPOX VIRUS

THE exact relationship between the viruses of cowpox and vaccinia has long been in doubt. Some authorities, among them Gins, have held that these two viruses are the same, and that cowpox is not a disease sui generis but an infection of human origin with either smallpox or vaccinia virus. It is true that some outbreaks of cowpox might be explained in this way, but in many there has been no apparent association with cases of smallpox or recently vaccinated people, and it is this discrepancy that has been largely responsible for the alternative hypothesis that cowpox is a natural disease of cows due to a specific virus, the evidence for which was set out by Ledingham [1] in 1935.

It might be thought surprising that this question should have remained so long unsettled, but the viruses of the animal pock diseases are a closely related group which cross-protect often to a high degree, and it is only by detailed study, more particularly with regard to antigenic composition, that the specific differences are made clear. Recent work by Downie [2 3] has, however, given us the long-awaited answer. He has made a comparative study of three strains of vaccinia and three of cowpox virus, one of which was isolated from lesions on the hands of a cowman on a farm in Sussex during an outbreak which was described by Davies, Janes and Downie [4] last year. Downie first of all studied the histology of cowpox and vaccinial lesions produced experimentally in the rabbit and guineapig and on the chorio-allantoic membrane of the developing hen's egg. He observed definite differences between the two. The cowpox virus produced much less necrosis of cells, and the inclusions it gave rise to were homogeneous acidophil bodies closely resembling those of ectromelia and quite unlike the ill-defined inclusions of vaccinia virus, which appeared to be largely lacking in acidophilic inclusion material. Further, the cowpox lesions were hæmorrhagic whereas those produced by vaccinia virus were not. The difference was fully confirmed when the viruses were examined serologically. Antisera made in the rabbit gave a considerable degree of cross-neutralisation, though the neutralising titre was always higher with the homologous virus. But by cross-absorption experiments Downie was able to show that although the cowpox and vaccinia contained antibodies in common, each possessed antibodies specific for the homologous virus. His conclusion that the viruses of cowpox and vaccinia are closely related but specific viruses seems amply justified. It remains now to determine what relationship exists between the virus of cowpox and smallpox and the status of the virus which Lipschutz has described as paravaccinia virus. Histologically the lesions produced by the so-called paravaccinia virus closely resemble those of the virus of cowpox, and it may be that the "nodes" described by Danish workers on the hands of milkers and ascribed by them to paravaccinia virus are, in fact, cowpox lesions.

1. Ledingham, J. C. G., *Proc. R. Soc. Med.* 1935, **29**, 73.
2. Downie, A. W., *J. Path. Bact.* March, 1939, p. 361.
3. Downie, *Brit. J. exp. Path.* April, 1939, p. 158.
4. Davies, J. H. T., Janes, L. R., and Downie, *Lancet*, 1938, **2**, 1534.

PLASMA TRANSFUSION

IN certain conditions transfusion of plasma is theoretically preferable to transfusion of whole blood. The over-concentration of the blood in shock, especially after burns, cannot very well be relieved by adding whole blood, and replacement of the lost fluid by plasma is a more rational method of treatment. Unfortunately there is no convenient way of storing plasma so that it may be ready for immediate injection. The result has been that, in this country at any rate, little experimental work has been done on these lines. In the United States more interest has been shown; but Lehman [1] says that no-one has previously described the use of plasma drawn from a "blood bank." If a supply of stored blood is available it is an easy matter to draw off the supernatant plasma; if a few red cells are included no harm is done. The red cells remaining behind can be resuspended in saline and transfused into anæmic patients who have no need of the plasma fraction. Lehman expresses satisfaction with the transfusion of plasma obtained from stored blood, and since his procedure is simple and sensible we hope it will be tested here.

FEVER IN CARDIAC FAILURE

THE continued fever without obvious cause sometimes seen in cardiac patients always arouses the disturbing fear of infective endocarditis, but though its explanation is obscure it often seems to be of little significance. Lemant [2] describes the case of a man of 38 who had had rheumatic fever at the age of 15, and five years later, during a second attack, had shown signs of mitral disease. He complained of palpitation and slight precordial pain, and on being put to bed these symptoms improved, but it was discovered that he was running an irregular pyrexia for which, even after a most searching examination, no organic cause could be found. Struck by the occurrence of frequent skin flushes in this patient his attendants applied various tests to investigate the condition of his autonomic nervous system, and convinced themselves that he was suffering from a disequilibrium of this system to which they ascribed the variations in his body temperature. His irregular fever was clearly of no great moment, for after a period of rest he returned to work without ill effects.

The possibility that raised rectal temperature may occasionally be an integral part of cardiac failure has been previously recognised and the phenomenon explained on more tangible grounds. Murray Steele [3] pointed out that in these cases the raised temperature is closely associated with the heart-failure and

1. Lehman, E. P., *J. Amer. med. Ass.* April 8, 1939, p. 1406.
2. Lemant, J., *Rev. Médecine*, February, 1939, p. 104.
3. Steele, J. M., *Amer. Heart J.* 1937, **13**, 542.

disappears with it. He was able to show that, even in normal subjects, a relatively mild and short obstruction of the peripheral circulation produces a rise in rectal temperature, and he suggested that the slowing of the skin circulation resulting from cardiac failure diminishes the amount of heat lost by the skin, so that more heat is retained in the body. On this view the "fever" is merely evidence of a defective peripheral circulation.

GRADING OF CARCINOMAS

PATHOLOGISTS are now able to give surgeons much practical help in estimating the malignancy of carcinomas of the colon and rectum, and in making a prognosis. One method that has established its position is that described in 1932 by Dukes,[1] in which operation specimens are dissected after fixation on a frame, and divided into three groups, A, B and C according to the depth of spread. In group A the growth is limited to the bowel wall; in group B it has penetrated the wall; and in group C there are metastases in the lymphatic glands. It has been known for some time that in the A cases the expectation of cure is extremely good, the five-year survival-rate being over 90 per cent. This has been confirmed by Grinnell,[2] of Minneapolis, who reports that all of 27 A cases survived for five years, whereas in the C group the five-year survival-rate dropped to less than a quarter.

Grinnell also discusses the value of grading based on histological characters for purposes of prognosis. He finds that four criteria are useful—glandular arrangement, invasiveness, nuclear polarity and the number of mitoses—and on this basis he divides the tumours into three instead of the four grades of malignancy described by Broders. He finds that the proportion of grade 1 cases (the least malignant) is higher in the colon than the rectum (49 as against 30 per cent.), whereas the proportion of grade 3 cases is higher in the rectum than the colon (32 as against 16 per cent.). His figures accord with the surgical experience that the results of resection of the colon for carcinoma are relatively good. A follow-up shows that the expectation of surviving five years is three times as great in grade 1 as in grade 3 cases.

There seems to be good reason for adopting both methods of grading for routine use, and the acceptance of Grinnell's suggestion of recognising only three grades of malignancy should make it easier to compare the two methods and to standardise the classification of carcinomas.

PROCIDENTIA OF THE RECTUM

THE treatment of complete prolapse of the rectum is one of those recurring problems with which every surgeon is concerned. In the last few years, following the teaching of Ernest Miles, many of these cases have been operated on by the method of recto-sigmoidectomy: this is equivalent to Mikulicz's operation of amputation, the redundant pelvic colon being pulled down until it is taut and delivered externally. A circular repair by suture is then carried out. The operation is not as difficult or as dangerous as would appear, in fact the mortality is very small, and the results are excellent considering the advanced age of many of these patients and the patulous condition of the external sphincter often present before operation.

Pemberton and Stalker[3] from the Mayo Clinic think that recurrences of rectal prolapse after sigmoidopexy are due to inadequate fixation of the rectum, and to meet this they have introduced an abdominal operation with some novel features. Incisions are made through the peritoneum on each side of the lower pelvic colon and rectosigmoid, and the rectum is stripped up from the hollow of the sacrum as far down as the coccyx. The rectum is then pulled up until it is taut and is fixed in this position by suturing it to the lateral walls of the pelvis, the anterior abdominal wall, or the back of the uterus. The peritoneal flaps are carefully closed by suture. They claim that after this operation the rectum becomes fixed by scar tissue in the hollow of the sacrum in its new taut position. They report 6 cases in which the operation was done, some of which are admittedly recent, but the method appears to be sound.

Any minor operation that would produce equivalent results would be welcomed, and the claims made by Gaume[4] should certainly be tested as soon as possible. His is an injection method, using 5 per cent. quinine and urea hydrochloride, the solution being injected, 3–5 minims at a time, through multiple punctures with the prolapse in the fully extruded position. The needle is inserted into the muscular wall of the prolapsed rectum and according to the length of prolapse five to seven circular rows of punctures are made. The prolapse is replaced and some form of intrarectal support is given, either by means of gauze packing or by an inflatable rubber bag with a flatus tube running through it (a "colpeurynter"). A firm anal pad and T-bandage are then applied and the patient rests in bed for 48 hours only. By this method, which Gaume has used in 9 cases, a fibrinous exudate and fibrosis are said to be produced in the rectal wall, forming a permanent splint which is sufficient to prevent recurrence.

DURATION OF GESTATION

AT the University Maternity Hospital of Freiburg, Hauptstein and Stöckert[5] have undertaken a most painstaking investigation, starting with the suspicion that the 280 days traditionally allotted to human gestation might not hold good today. They also hoped to assess the effect on the length of gestation of the emotional strains and physical stresses in Germany during and after the war. Their researches deal with three periods, each of nine years: the first from 1905 to 1913, the second from 1915 to 1923, and the third from 1929 to 1937. During these twenty-seven years 29,039 babies were born in the hospital, but only about a quarter of this number were suitable for study, for it was necessary to eliminate abnormal conditions calculated to confuse the issue by confining themselves to cases in which labour had begun spontaneously and had not lasted more than 30 hours. They also stipulated that the child should be living, and should weigh at least 2800 g. at birth. These and other restrictions reduced their total confinements to between 7000 and 8000 out of more than 29,000. They conclude that the average duration of normal gestation is between 281 and 282 days, and that gestation is longer for primiparæ than for multiparæ, even when allowance is made for the relatively longer duration of labour in primiparæ. Baby girls are a little slower to arrive than baby boys, a difference which the authors make no attempt to explain. No appreciable

1. Dukes, C., *J. Path. Bact.* 1932, **35**, 323.
2. Grinnell, R. S., *Ann. Surg.* April, 1939, p. 500.
3. Pemberton, J. de J., and Stalker, L. K., *Ann. Surg.* May, 1939, p. 799.
4. Gaume, J. M., *Med. Rec.* April 19, 1939, p. 273.
5. Hauptstein, P., and Stöckert, M., *Dtsch med. Wschr.* April 21, 1939, p. 630.

difference could be demonstrated in the three periods studied. Pregnancy seems to run its pre-ordained course even in times of national distress and nervous tension.

WAR-TIME DUTIES

SOME 95 per cent. of the medical profession in this country have told the British Medical Association what they are prepared to do if there is a war. In each of the association's divisional areas a local emergency committee has been established, and these bodies are now making provisional arrangements to meet local demands for medical personnel.[1] In consultation with local hospital authorities and officers of the Ministry of Health they have to nominate doctors for duty at first-aid posts and hospitals, and for medical boards examining recruits. Before doing so they must secure the consent of the person concerned, and in general they are asked not to allocate to local duties practitioners under 35. In London the central emergency committee of the B.M.A. will confirm or criticise the local arrangements in the light of demands that may be made by the military services. In time of war all such demands will go to the central committee, which will from time to time inform the local committees how many doctors they must furnish for H.M. forces, bearing in mind any special strain that is already thrown on the medical resources of their area. The Government has accepted in principle the central emergency committee's view that an official body should be created to control all military demands for medical personnel and "coördinate civilian medical services with the medical services of the defence forces." It has also agreed that the central emergency committee shall have full authority to advise this body on *all* questions of medical personnel in time of emergency. Meanwhile the service departments have consented to consult the committee before accepting for the Territorials, R.N.V.R. or R.A.F. medical reserve men who have been qualified for more than three years. At the same time the B.M.A. is anxious to encourage applications for commissions in the Territorial Army or the reserves, and although the age-limit is nominally 32 there is, it is stated, no reason why practitioners in the early forties should not apply. Apart from such applications, members of the profession who have returned an inquiry form but have not yet been allocated to local or general duty are advised to carry on with their normal work and await the time when their local emergency committee approaches them with suggestions.

This sketch of the organisation now in being takes no account of certain special groups. Pathologists fall outside the general scheme, for their work is to be disposed by a joint subcommittee of the central emergency committee and the Medical Research Council. Medical practitioners engaged predominantly in scientific work will be dealt with by a committee of the Royal Society, in coöperation with the central emergency committee; while the war-time duties of consultants or specialists now on the staff of hospitals (voluntary or municipal) in the county of London are the sole concern of the committee of reference set up by the Royal Colleges of Physicians and Surgeons. Further it should be noted that the central emergency committee will receive requests from bodies other than the military services, and will consult with the local committees as to whom they should "earmark" for the work. As for the maintenance of doctors given public duties during an emergency, it has been agreed that whole-time work at a hospital treating casualties shall carry a salary of £500 a year, plus £100 if board and quarters are not provided. (This would not apply to house-physicians and house-surgeons, who would be paid at normal rates.) There will be additions for more onerous service and practitioners in positions of special responsibility may receive up to £1500 a year. It should be understood, however, that none of the hospital posts would represent Government employment; the holders would be employed and paid by the hospitals, though the Government would reimburse the hospitals on an agreed scale. For work at first-aid posts a fee of 1½ guineas is offered for a session of two hours, or 3 guineas for a longer period in any one day. A retaining fee of 20 guineas per annum is meanwhile to be given practitioners charged with training nursing and first-aid personnel.

The central emergency committee, though it remains a committee of the British Medical Association, has been reconstituted to make it representative of all branches of the profession, and now contains, among some 35 members, nominees of the three royal colleges in London, the Society of Medical Officers of Health, the Medical Women's Federation, the Medical Research Council, and the medical committee of the House of Commons. In view of the interest of its activities to all who have answered its questionnaire we hope that future statements on its work and wishes may be circulated as widely as possible.

1. *Brit. med. J.* May 20, 1939, suppl. p. 277.

ESCAPE

THE Medical Society of Individual Psychology is holding a series of discussions on various means of flying from reality. On May 11, in reading a paper on the escape into drugs and alcoholism, Dr. Desmond Curran criticised the term "escape" on the ground that it is extremely general and extremely vague. To ascertain its meaning, he said, he had consulted a psychiatric friend and the Oxford Dictionary. The friend suggested that it was "the new term for anyone who tried to be happy." The dictionary provided a wide variety of meanings, and it seemed that the word could be applied to activities good or bad, successful or unsuccessful. In psychiatry, however, its use is restricted to activities which, if not reprehensible or unwise in themselves, nevertheless result in, or illustrate, failure or lack of success. Dr. Curran objects to the word because it is employed to denote the *state* of mental ill health, while on the other hand the ill health is regarded as a *means* of escape. Thus "escape" is made to double the rôles of a description and an ætiological explanation; and believing that it is poor as the first and often misleading as the second, he thinks the term should be avoided in psychiatry and left to journalists.

We regret to announce the death at Cardiff on Tuesday of Dr. DONALD ROSE PATERSON, consulting surgeon for diseases of ear, nose and throat to the Royal Infirmary. Dr. Paterson was in his 77th year.

Dr. F. T. H. WOOD, medical officer of health for the county borough of Bootle, has been elected president of the Society of Medical Officers of Health for the session 1939–40. He will take office on Oct. 1.

Dr. J. T. IRVING, head of the department of physiology of the Rowett Research Institute, Aberdeen, has been appointed to the chair of physiology in the University of Cape Town.

CONTROL OF THE COMMON FEVERS

THE PNEUMONIAS

Reviewed by DR. ROBERT CRUICKSHANK, *Pathologist, L.C.C. Group Laboratory, North-Western Hospital, Hampstead*

PNEUMONIA is notifiable as "acute primary pneumonia," which includes lobar pneumonia and primary bronchopneumonia but not the secondary pneumonias that follow other infections, such as measles. The only notifiable form of secondary pneumonia is "acute influenzal pneumonia." Some idea of the age-incidence, sex-incidence, and case-mortality of pneumonia may be obtained from table I.

TABLE I—AGE-INCIDENCE, SEX-INCIDENCE, AND CASE-MORTALITY OF PATIENTS NOTIFIED AS PNEUMONIA AND ADMITTED TO THE CITY OF GLASGOW ISOLATION HOSPITALS JUNE 1, 1918–DEC. 31, 1928

Age-groups	Males			Females			Both sexes		
	Cases	Deaths	Mortality per cent.	Cases	Deaths	Mortality per cent.	Cases	Deaths	Mortality per cent.
0– 5	5765	1524	26·4	4562	1052	23·1	10,327	2576	24·9
6–10	1592	85	5·3	1039	54	5·2	2631	139	5·3
11–15	958	37	3·9	535	21	3·9	1493	58	3·9
16–25	2226	227	10·2	887	125	14·1	3113	352	11·3
26–35	1384	261	18·9	912	183	20·1	2296	444	19·3
36–45	1071	325	30·3	580	162	27·9	1651	487	29·5
Over 45	1385	643	46·4	634	253	39·9	2019	896	44·4
	14,381	3102	21·6	9149	1850	20·2	23,530	4952	21·0

LOBAR PNEUMONIA

Some epidemiological features.—Lobar pneumonia is essentially an infection of adolescence and manhood. It accounts for nearly two-fifths of all the pneumonia deaths, and about 70 per cent. of them (7396 in 1934—a non-influenza year) take place in the age-group 20–65. Lobar pneumonia is a specific infection with a low but undoubted infectivity, comparable perhaps to cerebrospinal fever. The pneumococcus is responsible for 95 per cent. of the cases, most of which are associated with a limited number of the 30 or so pneumococcus types; in different areas of this country types I and II together account for 45–75 per cent. of cases in adults. However, the conception of the disease as a specific infection is not unreservedly accepted, and the following arguments have been adduced against it: (1) lobar pneumonia is mostly sporadic, and it is ordinarily difficult to trace any connexion between cases; (2) 30–60 per cent. of the population, under normal conditions, carry pneumococci in their throats, although these are rarely the types that cause lobar pneumonia; and (3) the pneumococcus may, under certain artificial conditions, change its type (Griffith 1928). Why not then a natural change, when conditions are propitious, in the pneumococcus already present in a person's throat to a virulent type which will initiate the pneumonia? The argument cannot be pursued further here, and it must be sufficient for the moment to state briefly the evidence in favour of the opposite view, for which are required specific proof of the infectivity of lobar pneumonia and, if possible, an explanation of how the infection is spread. Epidemics of lobar pneumonia are rare, but in recent years several outbreaks have been recorded and carefully studied; in all of them the infecting organism was either pneumococcus type I or type II.[1]

For example, 12 cases of lobar pneumonia and 2 of otitis media due to pneumococcus type I occurred over a period of four months in an isolated orphanage of 87 boys aged 5–20 (Strøm 1931).

Smillie (1936) described a localised epidemic of lobar pneumonia due to pneumococcus type II in a Veterans' Hospital, which began in March, died down in the summer, and flared up again in the autumn; the spread of infection and its recrudescence were traced directly to carriers of the epidemic strain.

An outbreak on a larger scale was recorded by Nichols (1917) among American recruits in a camp of 43,000 men during the winter of 1916–17; 78 per cent. of the cases were due to pneumococcus types I and II, and there was evidence of tent, company, and regimental contagion.

Although more than one case of lobar pneumonia in a family is uncommon, numerous instances of familial spread have been collected (Cruickshank 1933a, Tilghman and Finland 1936)—e.g., a family of father, mother, and two grown-up sons all developed a pneumococcus type II infection within a period of three weeks, and all but the mother died.

Similar instances of contact infection between patient and visitor or attendant-nurse are familiar to those with much experience of lobar pneumonia and have been bacteriologically verified. But, since most cases of lobar pneumonia appear out of the blue and have no obvious connexion with another patient, some source other than the acute case must exist if the infectious nature of the disease is to be proved. The reservoirs of infection are contact and convalescent carriers of the epidemic strains, and possibly the pneumococcus-infected dust of rooms where pneumonic patients have been nursed (Stillman 1916, 1917, Christie 1932, 1934, Cruickshank 1933a). The contact, usually temporary, carrier exists in the family of the patient nursed at home and among nurse and patient contacts of hospital cases. The convalescent carrier is most often a patient with some pathological condition of the upper respiratory tract (infected tonsils, turbinates, or sinuses, or chronic bronchitis), and in him the carrier state may persist for many months. The apparent rarity of carriers of the epidemic pneumococci among the general population may be due to the selection of samples from occupations where pneumonia is rare, for many years ago Sydenstricker and Sutton (1917) found a carrier-rate of 12 per cent. of types I and II pneumococci among the Bethlem steel workers, in whom pneumonia was at the time more than ordinarily prevalent.

Pneumonia is a winter disease, and, if the analogy with cerebrospinal fever means anything, we should expect lobar pneumonia to attain its maximal incidence in the spring months. Madsen (1930), from the separate notifications of lobar pneumonia and bronchopneumonia in Denmark, has shown that lobar pneumonia has its peak later in the winter than bronchopneumonia, and MacGregor (1933), from death-registration figures in Glasgow, found

1. Schroder and Cooper's (1930) epidemic of respiratory infections among children ranging from coryza to lobar pneumonia due to pneumococcus type V is an exception, but type V is one of the "epidemic" types.

that lobar pneumonia had a regularly recurring plateau of greatest frequency in the first four months of the year, whereas bronchopneumonia was more erratic.

Despite the foregoing evidence that lobar pneumonia is an infectious disease, a small proportion of the cases are possibly autogenous infections, among them pneumococcus type III infections, which are commonest in older and debilitated persons, and are more frequent in America than in this country. This national difference in the type-distribution of lobar pneumonia and the higher case-mortality in America suggest a greater susceptibility among Americans, of whom the coloured people especially have a low resistance to the disease.

Early diagnosis —The control and effective treatment of most infections depend on early diagnosis, and in this lobar pneumonia is no exception. That it is not easy to recognise in its early stages is shown by the late average day of illness (third to fourth) of the cases admitted to hospital, due mainly to the delay in development of unequivocal physical signs. An early report of type I or II pneumococcus present in the sputum of an ill patient is practically diagnostic of lobar pneumonia. The Neufeld method of direct typing from the sputum—i.e., swelling of the pneumococcus capsule when the organism comes in contact with an antiserum of homologous type—can readily be learnt by doctor or technician (Cruickshank and Montgomery 1938), and suitable sera are now available for all thirty pneumococcus types (Lederle).

The results obtained from the direct typing of 207 specimens of sputum received in this laboratory during 1938 may be quoted as an example. These specimens came from a variety of respiratory infections besides lobar pneumonia: 72 per cent. of the total were correctly typed by the Neufeld test, and this figure was raised to 90 per cent. for the 125 specimens from which type I or II pneumococci were isolated.

BRONCHOPNEUMONIA

Primary bronchopneumonia affects the very young and the very old and is probably in most cases an autogenous infection in persons with low resistance. The pneumococcus is the infecting organism in some 90 per cent. of the cases, although its causal relationship is less easily proved than in lobar pneumonia, for the infecting pneumococcus types in bronchopneumonia mostly correspond to those found in the upper respiratory tract of healthy people.[2] However, various corroborative tests have shown that the pneumococcus isolated by throat-swab—the most available method in the pneumonias of children—is the causal organism in 80–90 per cent. of cases. Recent work has indicated which, if more than one type is recovered, is likely to be the infecting strain (Andrews 1937).

The infection spreads as a rule along the mucosa from bronchi to bronchioles and alveolar tissue; hence a lobular distribution is the main feature. Although typically both lungs are involved, a single lobe may be affected, with very little evidence of infection elsewhere, and it may be impossible to say whether the disease is, pathologically, a lobar pneumonia or a bronchopneumonia. Indeed, although lobar pneumonia is a rare cause of death under 3 years of age, it probably occurs more frequently in young children than was formerly believed. Bronchopneumonia is, however, the prevailing form of infection among infants, and both its incidence and severity of attack rapidly diminish with succeeding years. The greater susceptibility in infancy seems to be due in part to a low general resistance and in part to the short wide bronchial tree, delicate mucosa and poor expulsive power of the child at this age. The onset, often preceded by some minor respiratory infection, is more insidious than in lobar pneumonia, and dyspnœa and cyanosis are usually early and prominent. Although the infection may end abruptly after six or seven days, more often the remittent fever continues for ten days or more and gradually settles by lysis. Specific antibodies to the infecting pneumococcus are not present in the blood of the convalescent child (Gundel and Schaefer 1932); hence recovery must depend on non-specific factors.

Bronchopneumonia is more affected by environmental and climatic conditions than is lobar pneumonia, and such studies as those of van Loghem (1928) and Smith (1934) indicate that contagion plays little part in the incidence of those minor respiratory infections which are its usual precursors. However, close contact, particularly in regard to sleeping-accommodation, may lead to a spread of certain of the potentially pathogenic pneumococci —e.g., types III, VIII, and XIII (Cruickshank 1933b)— and therefore overcrowding may be expected to facilitate infection, given the other necessary factors. Thus it may happen that two or more members of a household develop bronchopneumonia about the same time and due to the same type of pneumococcus, but that does not imply that the condition is infectious.

THE NEWER REMEDIES FOR PNEUMONIA

Serum.—The treatment of pneumonia with specific antipneumococcus serum has not become popular in this country. The main obstacles to its more general use have been the need for bacteriological typing of the pneumococcus, the difficulty in deciding whether to give serum to a patient who is likely to recover without it or to withhold it when there is little chance of recovery, the difficulty and possible dangers of intravenous medication, and the expense of the serum. Most of these obstacles can be surmounted in hospital practice, but for the private patient a careful assessment of the pros and cons is probably needed. The therapeutic value of the serum in certain type infections, particularly if given early, has not been seriously challenged. A type I pneumonia in a patient between the ages of 20 and 40 seen within three days of onset is likely to be aborted by a total dosage of 40–80,000 units of concentrated serum (initial dose 20–40,000 units) at a cost in hospital of £2–£4. For type II infections, which are more severe, large doses of serum are required, and treatment of a patient over 40 years affected by either type I or II and already in his fourth day of illness is less likely to be successful. In America, where large sums of money have been spent on encouraging the treatment of pneumonia with serum, the latest advances are the use of serum in some of the commoner of the "higher" type infections—e.g., types V, VII, VIII, and XIV—with apparently good results; the substitution of rabbit for horse therapeutic sera; and the extension of serum therapy at state expense to the smaller towns

2. Pneumococcus types I, II, V, VII, XIV, and XXII seem to be the principal "epidemic" types; they are usually associated with lobar pneumonia (types XIV and XXII particularly in children) and are rarely found in the throats of the healthy population except among intimate contacts of infected persons. Types III, IV, VI, VIII, XIII, XVIII, XIX, and XXIII are perhaps the predominating saprophytic or potentially pathogenic pneumococci; of these types IV, VI, XIX, and XXIII are commoner in children and therefore are frequently isolated from cases of bronchopneumonia in the young; types III, VIII, and XVIII occur more often in adults and are associated with lobar pneumonia and bronchopneumonia, particularly in older and debilitated persons.

and hospitals and to private practice (Lord and Heffron 1938). The results obtained at four centres in this country (table II) have been presented in a report of the Therapeutic Trials Committee of the Medical Research Council (1934).

TABLE II—EFFECTS OF SERUM TREATMENT ON CASE-MORTALITY OF LOBAR PNEUMONIA

Pneumococcus	Age-group	Controls			Serum			
		Cases	Deaths	Mortality per cent.	Cases	Deaths	Mortality per cent.	Expected deaths*
Type I	20–40	224	25	11·2	140	8	5·7	16
						} 18		} 27
	40–60	77	20	26·0	44	10	22·7	11
Type II	20–40	194	44	22·7	111	14	12·6	25
						} 33		} 43
	40–60	111	38	34·2	53	19	35·8	18

* The "expected deaths" are those which would have been recorded if the serum-treated groups had died at the same rates as the corresponding controls.

Drugs.—The treatment of pneumonia with 2-sulphanilyl-aminopyridine (M. & B. 693, Dagenan, Sulfapyridine) is likely to supplant all other remedies, for, besides being relatively cheap and easy to give or take, it is probably effective against pneumococcal pneumonias of any serological type. Its value was first demonstrated by Whitby (1938) in experimental infections in mice, and since then published and unpublished accounts have testified to its usefulness in the treatment of lobar pneumonia, although it is yet too early to say just how effective it is. All the reports so far published are lacking in one or other of the desiderata necessary for a critical judgment of the drug's efficacy—namely, an adequate series of cases of undoubted pneumonia; objective tests of severity, such as serological type, leucocytic response, or quantitative blood-culture; and significant mortality figures. The available evidence, however, suggests that it both shortens the infection and saves lives and is particularly useful where serum is least effective—e.g., in the older age-groups and in type III infections. An adequate dosage is that recommended by Evans and Gaisford (1938)—namely, an initial dose of 2 g. (4 tablets) followed by 1 g. every four hours for two or three days, and, if the temperature has fallen, by smaller doses for two or three days more. A tendency to recrudescence, if treatment is not continued beyond the time when the temperature returns to or near normal, has been evident in most reports. Even after the infection has apparently been aborted, the patient may still feel lethargic, and convalescence is apt to be protracted. The most worrying effect of the drug is its liablity to produce gastric upset, causing nausea, anorexia, and (in a fair proportion of cases) vomiting, with the result that the physician may be left in doubt whether to continue with the treatment and risk the ill effects of gastritis and interference with nourishment. Glucose by mouth may be helpful in such cases. Although cyanosis appears in some cases, the blood examinations carried out by Evans and Gaisford (1938) do not suggest any toxic effects of the drug on the hæmopoietic system, but blood-counts should be done on all patients treated over a prolonged period. It may well be that for the more severe infections a combination of serum and chemotherapy will be found most effective; it has more to recommend it (Fleming 1938, Loewenthal 1939) than has a combined drug and vaccine therapy as suggested by Maclean et al. (1939).

There are very few published reports on the use of M. & B. 693 in the bronchopneumonia of children, in which the drug might be expected to produce good results. Evans and Gaisford (1938) mentioned, without giving details, the treatment of 40 cases of bronchopneumonia in children, with only 2 deaths. The tablets crushed up and given in milk did not cause any toxic effects. The recommended dosage was as follows: for infants 1–3 months old ¼ tablet four-hourly, 6–12 months ½ tablet four-hourly, the dose being gradually increased to 1 tablet four-hourly for children aged 5. Thompson and Greenfield (1938) found that the administration of sulphanilamide diminished the incidence of secondary bronchopneumonia after measles and pertussis, and a still greater success may be expected, from the prophylactic use of M. & B. 693, because it is effective against both pneumococcal and streptococcal infections.

CONTROL AND PREVENTION

From what has already been said it is obvious that the control and prevention of lobar pneumonia and bronchopneumonia call for different measures. In both diseases early diagnosis is essential for saving lives by appropriate treatment.

Lobar pneumonia.—The control and prevention of lobar pneumonia in civilian life presents great difficulties, because the infectivity is low and the undetected carrier probably plays a large part in the spread of infection. Lobar pneumonia might be controlled better if it were more widely recognised as an infectious disease, so that appropriate precautionary measures, including the isolation of the patient at home or in a special hospital unit, could be applied. In particular, contact between the patient and susceptible persons—e.g., those with colds or who are below par, the very young, and the very old—should be prevented. Avoidance of chills, of extremes of heat and cold, of excessive fatigue, and of overcrowded and badly ventilated halls and cinemas is perhaps a counsel of perfection. It is unlikely that attempts to deal with persistent carriers of "epidemic" pneumococci would reduce the incidence of lobar pneumonia, but anyone who has once had the disease should be particularly careful to avoid predisposing causes, since he is more than ordinarily liable to a second attack. Measures for a more specific prevention of lobar pneumonia are indicated only where the congregation of many susceptibles is likely to lead to an epidemic. For example, inoculation with a polyvalent vaccine of the prevalent pneumococcus types has long been a routine procedure in some of the South African mines, where the natives are particularly susceptible. Unfortunately, although the records show that pneumonia due to the pneumococcal types included in the vaccine has diminished, the general incidence has not been greatly affected, because other types and other organisms have supplanted those against which protection was given (Ordman 1931, Orenstein 1931).

Immunisation against the prevalent types I, II, and III was tried with some success among American soldiers in 1917–18 (Cecil and Austin 1918).

A recent experiment in the immunisation of volunteers in the American Civilian Conservation Corps is interesting both for its large scale and for the use of a polysaccharide antigen instead of the crude bacterial bodies (Felton 1938). In preliminary tests some 32,000 men were inoculated, and in two later and more rigorously controlled experiments

there were 70,000 men under observation, of whom over 29,000 were given a single injection of 1 mg. each of a polysaccharide preparation of types I and II pneumococci. An analysis of the results "suggests that the antigen may be effective in reducing the case-incidence of pneumonia." In one experiment the pneumonia-rate was 4·36 per 1000 years of life among the inoculated and 7·18 in the control group; the corresponding figures for the other experiment were 1·73 and 15·69. The immunisation seemed to be most effective in young adults and in those recently inoculated. There was no effect on respiratory infections other than pneumonia.

Bronchopneumonia.—If bronchopneumonia is mostly an autogenous infection in persons of low resistance or living under conditions which lead to a lowered resistance, its prevention can only be achieved by remedying these defects; but it is easier to say what the remedies are than to apply them. Obviously it is on the mortality among children under 5 years of age that an attack must be made, and the necessary measures—better nutrition and clothing, better housing with more fresh air and sunlight, regular habits, and proper parental care—are all part of the social and economic improvement which our Government is steadily encouraging. That more is being done along these general lines in certain areas than in others is suggested by the infant death-rates in different towns. For example, although the rates are generally higher in the industrial north, owing principally to an excess of deaths from respiratory infections (measles, pertussis, bronchitis, pneumonia), a rate of 45 for Huddersfield is a challenge to similar towns to reduce theirs from a figure of 80–90. The reduction of the infant death-rate to 50 or under would mean an annual saving of more than 4000 lives in the county boroughs alone. Of more specific remedies, it has been pointed out by Ford (1934) that many of the recurrences of pneumonia in children are associated with infected tonsils and ears, and Mackay's (1931) work on iron deficiency in infants, causing an increased susceptibility to respiratory infections, probably indicates a useful prophylactic measure. And again let it be emphasised that any steps for the prevention and control of measles, pertussis, and influenza will bring about a big reduction in the deaths from bronchopneumonia. Luckily, as reference to the appropriate reviews in this series will show, advances in the prevention and control of these three infections are being made or are to be expected.

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SPECIAL ARTICLES

MEDICINE AND THE LAW

Divorce for Insanity: Information from Hospitals

WHEN the Herbert Act allowed incurable insanity (with a five-year period of continuous detention under care and treatment) to be a ground for divorce, it was plain that the courts would have to rely on evidence being made available by mental hospitals. In the Divorce Court last week the President, while paying a tribute to the assistance given by the hospitals generally, remarked upon the "obstruction" offered by the authorities responsible for the Warlingham Park Hospital. Counsel representing the Official Solicitor stated that no difficulty had been experienced where the Official Solicitor was concerned, but he had heard that other parties had not been so well treated. Two days later an apology was offered to the President by counsel on behalf of the Croydon corporation and the Warlingham Park Hospital visiting committee. He stated that the non-appearance of a medical witness on the previous occasion was due to a chapter of accidents which culminated in the illness of the witness concerned. The President explained that he had not complained merely of the absence of the medical officer; it was the failure to give assistance to litigants in the early stages of the case. The incident ended satisfactorily in an assurance that the hospital would in future be guided by what his lordship had said. The possible awkwardness of combining loyalty to the courts with loyalty to the patients, inherent in this rather difficult new law of divorce, seems, on the whole, to have been reasonably removed.

Insanity and Desertion

There continue to be doubtful points for the Divorce Court to decide. Early in April (in Bennett *v.* Bennett) Mr. Justice Bucknill had the case of a wife who deserted her husband in 1905 and was certified as insane in 1936. The Herbert Act allows divorce for desertion for at least three years immediately preceding the presentation of the petition. The wife had deserted her husband for 31 years from 1905 onwards, but, during the 18 months before the date of the petition, she was a certified patient in a mental hospital. Had she, by those 31 years of desertion, put herself outside the pale of repentance? Desertion is a continuing offence. When she decided to desert her husband, desertion presumably continued until she expressed a desire to return. The judge held that her insanity raised the presumption that she was incapable of forming a reasoned judgment upon her relations with her husband. When she was certified as insane, the burden of proof was placed on the husband to show that she retained a rational

intention to desert him. The husband could not show this; it was a hard case, but divorce could be granted only on the terms enacted in the statute. If insanity supervenes a week or even a day before the petition is presented, Mr. Justice Bucknill's ruling will apply and the necessary statutory period of three years' continuous desertion will be interrupted.

Detention under Care and Treatment

Another problem arose last week (in Green *v.* Green) over the meaning of five years' continuous detention under care and treatment. In the Shipman case the President had considered whether the occasional absence of a mental patient on parole for week-ends would be a fatal interruption of the statutory five-year period. He had held that, unless the absences were frequent, they need not be regarded as breaking the detention. He had now to consider the effect of absence for a fortnight at a time. The case concerned a patient of the Banstead Hospital who was sent to Whitstable for a fortnight on trial (under section 55 (1) of the Lunacy Act, 1890) to a house belonging to the Mental After-Care Association. The house was inspected and approved by the L.C.C. for the reception of parties of patients released on trial. It was not a holiday home for other persons unconnected with mental institutions. The parties were escorted to the house by an appropriate escort from the hospital; the persons in charge of the house were in constant communication with the hospital, and any lapse of conduct on the part of a patient would be at once reported to the hospital. The President was satisfied that the Mental After-Care Association was acting as agents for the L.C.C. for a kind of absence where the element of discharge did not appear at all; the patients were in an atmosphere of greater liberty and less restraint, but they remained under the careful control and observation of the officers of the association acting as agents of the L.C.C. The result was that this patient from Banstead was still subject to discipline and modified restraint during the fortnight's absence, and the court could properly hold that there had been no interruption of the detention. The President would, it seems, have taken a different view if the fortnight's absence had been simply a holiday.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

PELLAGRA

ACCORDING to Prof. Tomescu the incidence of pellagra in Rumania is rising. In a lecture to the Cluj Medical Society he recalled that Babes predicted forty years ago that pellagra would be stamped out when every peasant possessed enough land to produce his own foodstuffs. Since then, owing to land reform and the expropriation of big estates, huge areas of land have been divided between the peasants, but this has not lessened the number of cases of pellagra. The reason is that the general hygiene and economic and cultural state of the peasants are still very low; most of them live on maize, cabbage and potatoes, with wheaten bread and meat only on rare occasions. The poultry and eggs that they produce are sold and never appear on their own tables. In addition, their housing and clothing are inadequate and alcoholism is rampant.

Prof. Tomescu suggests that the first step in a successful campaign against pellagra must be to raise the standard of living in the rural districts. Such measures have been successful in Italy, where pellagra was once much more prevalent than it is in Rumania.

A NEW HOSPITAL IN BUCHAREST

Jaques Elias, a Bucharest banker, who died in 1923, bequeathed 250 million lei to the Rumanian Academy of Science to erect and maintain a hospital. The magnificent new hospital on the Bulevardul Marasesti has now been opened. It has 120 beds and in war-time its accommodation can be expanded to 400, but it will mainly cater for outpatients, the wards being intended primarily for observation and laboratory investigations. The equipment is lavish and it is claimed that the physiotherapy department is unequalled in Europe. The hospital will be under the direction of Prof. Danielopolu.

URIC ACID IN THE SALIVA

Dr. Joseph Kallós has suggested that estimation of the uric acid in the saliva gives a much better idea of the uric-acid production of the body than does examination of the blood or urine. In 100 unselected subjects he found that the saliva uric acid was between 0·9 and 2·4 mg. per 100 c.cm. in 12 cases; between 2·5 and 4·2 mg. in 61 cases; and between 4·1 and 20·6 mg. in 27 cases. A value of over 4 mg. before food is taken in the morning points to excessive uric-acid formation. Kallós carried out repeated estimations in the same subject and has found that after the intake of foods containing purine bodies the figure may rise 1–7 per cent. He compared the uric-acid values in the saliva and in the urine and found that the former often shows a considerable rise while the latter is normal, and in such cases the clinical manifestations are in harmony with the findings in the saliva. Similarly, a high value for the saliva uric acid was often associated with a normal figure in the blood.

Kallós's method of estimating uric acid in the saliva is simple and takes only a few minutes. Apart from its value in detecting a gouty tendency it may be used for determining the amount of uric acid formed after taking different kinds of food. The saliva uric acid is first estimated with the stomach empty, the food to be tested is then taken, and the saliva is tested again two or three hours later.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

CONFERENCE OF STATE HEALTH OFFICERS

As usual the meetings of the state health officers with the officials of the Children's Bureau, the provincial health officers of Canada, and the surgeon-general and officers of the U.S. public-health service, held from April 20 to 25, were an occasion for discussing the technical advances in the field of public health. In addition they were concerned this year with the movement for extension of medical care at present crystallised in the Wagner National Health Bill and also with the possibility of general mobilisation that results from the danger of war.

Discussions of the national health programme were disappointing. The phobia of the American Medical Association in regard to health insurance was in evidence, and in general the state health officers showed a fearfulness and lack of imagination in the face of the undoubted popular demand for improved health services, which makes one wonder whether they have either the courage or ability to provide

leadership in the broadened programme of national health on which this country is entering.

On the other hand encouraging progress was reported in the control of syphilis. State and local health departments have responded promptly to the increased federal grants for the control of venereal diseases, and during the first six months of the national campaign have provided more than $4,300,000 to match the federal appropriation. More than half a million new patients, it is estimated, will be brought under treatment for syphilis during the first year. There are now 1773 treatment centres reporting to the public-health service through the state health departments, compared with 713 in 1936, and in the same period the doses of arsphenamine distributed by state health departments has increased from 1,321,000 to an estimated 3,750,000 in the present year. Laws requiring premarital examinations, including serological tests for syphilis, have now been passed in 18 states and 8 states now require serological tests on all expectant mothers.

Dr. K. E. Miller, who has been assigned to the Federal Trade Commission to advise them in regard to their new duties in the control of advertisements of foods, drugs and cosmetics, pointed out that until the Wheeler-Lea amendment was passed it was necessary for the commission, in order to sustain an action against false advertising, to prove (1) that there was injury to competition, and (2) that the correction of such injury was of interest to the public. Now, in the interest of the consumer, the commission may issue a cease-and-desist order where advertising is false not only in regard to what it says but also in regard to what it may fail to say. A product which contains a harmful drug and fails to carry in the advertising an appropriate warning is considered to be falsely advertised. The commission clearly intends to exercise serious restraint on this billion-dollar industry and it is probable that this will result in an attempt to build up intra-state industries which, since their products will not cross state borders, will be immune from all federal control. For this reason Dr. Miller strongly urged that the states should enact similar legislation to protect themselves.

Encouraging reports were presented of the success of vaccination against yellow fever. In Rio de Janeiro more than a million have been vaccinated and the results as a whole have been excellent. Laboratories for the manufacture of yellow-fever vaccine have been established in Colombia and are projected for other South American countries. It has been determined that the blood of the vaccinated persons does not contain virus in a form which can be transmitted by the aedes mosquito. It is said that the technique of the disinsectisation (horrible word!) of aircraft travelling between this country and the countries where yellow fever is endemic has been improved but not yet perfected, the problem being rendered more difficult by the adoption of ever larger types of aeroplanes.

Two dissimilar reports of health insurance in the British Empire were presented. Dr. Gregoire Amyot, assistant provincial health officer, British Columbia, spoke on the health-insurance plan passed by the provincial legislature but at present inoperative because of opposition of the medical profession. He described the measure as dead but not buried. On the other hand Dr. C. E. Hercus, dean of the medical school at Dunedin, New Zealand, spoke of the very ambitious scheme introduced by the Labour government in that country. He said that there the profession had not been consulted before the introduction of the measure and as a whole had disapproved of it. But after the unequivocal results of a general election had made plain the popular demand they had agreed to coöperate in working it out.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE HOSPITAL SWEEPSTAKES

THE twenty-seventh draw of the Irish Hospitals Sweepstakes—that on the Derby—took place last week. The state of international tension naturally had a heavy influence on the sale of tickets, with the result that the receipts were the smallest since the first sweepstake. After expenses had been met, including the prize fund, a sum of £305,966 was available for the hospitals. The total amount that has been collected for the hospitals from the twenty-seven sweepstakes is £13,753,692, the largest sum from any one sweepstake being £779,899 from the Derby in 1932. If one may judge of the distribution of the sale of tickets from the destination of the prizes, the United States of America furnishes the highest number of purchasers. Of the 819 prizes, 403 went to that country, 224 to "Europe" (that is, European countries other than Ireland), 77 to Canada, and 59 to Ireland. It is understood that many of the Dublin hospitals are now busy with their plans for development, and that their proposals (though not as yet their individual plans) have received a general approval from the Minister for Local Government and Public Health. In the case of some of the hospitals which are bound by ancient charters or acts of Parliament legislation will be necessary, and it is expected that a bill for this purpose will shortly be introduced as a government measure.

PARIS

(FROM OUR OWN CORRESPONDENTS)

A NEW INSTITUTE FOR FUNCTIONAL RECUPERATION

FOR a long time M. Justin Godart, a former minister of public health, has cherished a scheme for putting functional recuperation on a material and institutional basis. Such an institution would be a centre at which general practitioners, the medical officers of insurance companies and industrial undertakings, the medical staff of the national health-insurance organisation, and physical-drill teachers could learn, on the spot or by correspondence, in theory and in practice, the scientific principles at the root of functional and professional rehabilitation. By his system of measuring the output of work, M. Godart has felt convinced he could put the studies of the proposed institute on a scientific basis. It has now materialised, and it was inaugurated at the end of March with much ceremony. Visitors to this institute must be prepared to undergo an energametric examination by one of its devotees.

ACTIONS FOR DAMAGES

A woman afflicted with warts on her hands sought relief from a doctor who ordered radiotherapy—two exposures, each of half an hour. The warts melted away like snow, but their place was taken by lesions resembling burns. Oxide of zinc was applied, but scarring ensued with paralysis of the left hand. After waiting three years in the growingly uncertain hope of recovery, the patient turned to her doctor for financial instead of medical relief, estimating the damage at 100,000 francs. Involved in her claim for

compensation was not only the doctor, but also a nurse and the nursing-home. While the action for damages progressed at the speed proper to well-conducted legal proceedings, the patient was gathered to her fathers. But in due course her heirs were awarded 10,000 francs in posthumous recognition of the wrongs she had suffered.

In another lawsuit, subversive of the doctrine that dog does not eat dog, one doctor sued another for the disparaging comments made by him to a third party who happened to be the patient of the plaintiff. He was no less a person than Dr. Raphaël Massart, one of the editors of *Concours Médical*. Practising medicine as well as medical journalism, he had occasion to treat a lady under the national health-insurance scheme. A certain Dr. X, employed as a medical inspector under the same scheme, visited the lady in question and made certain unfavourable comments on her doctor. Similar comments being repeated to the lady's husband, and a report thereof being made to Dr. Massart, he felt constrained to bring an action for slander, and was successful therein to the tune of 1000 francs. Not heavy damages. Perhaps the court held that its assessment should be in keeping with the triviality of the defendant's remarks.

THE LANCET 100 YEARS AGO

May 25, 1839, p. 338.

From a leading article on the Registration Acts.

Although, in the words of Mr. Justice BEST, "all the property in this country, or a large part of it, depends on registers," the parochial registers have been imperfectly kept, and negligently preserved by the Episcopalian Clergy. Transcripts were not made in many parishes; and when they were transmitted to the Diocesan Courts, they laid there, in "cold obstruction," unarranged, unindexed, and ready to fall to pieces. In a scientific and in a political point of view, too, the ecclesiastical registers were worthless, for they contained only a part of the births and deaths. The extent of the deficiency, though great, was unknown, but it differed in different counties, and the *cause of death* was not specified. The necessity of instituting an accurate civil registration of births, deaths, and marriage contracts, entirely independent of ecclesiastical ceremonies, had become inevitable and imperative; the high church party admitted this; and the Act for Registering Births, Deaths, and Marriages, introduced by Lord JOHN RUSSELL, passed both Houses of Parliament in 1836, and obtained the Royal assent. . . .

It will be evident that the system of Civil Registration is in every respect an immense improvement upon the Ecclesiastical Registry. Church ceremonies are no longer registered; and the birth, marriage contract, and death of every Englishman are recorded without any reference to the numberless differences of theological opinions which necessarily prevail among a speculative Protestant community. The cause of death is registered. Adequate means have been adopted to preserve the registers, and to render them easily accessible by means of proper indexes. A summary of the registered facts, which will accurately represent the state of public health, is to be laid before Parliament, and published every year.

". . . Few people, young or old, ask for more than an opportunity to make a living, to express themselves in creative effort, to live in peace. Surely a race which has learned how to crack the atom should be able to achieve these simple objectives. The important thing to remember is that the majority of our difficulties are man-made. They are not the result of penury of nature; nor are they visited upon us by a vindictive fate. They are the result of human carelessness, human short-sightedness, human greed."—Mr. JOSEPH KENNEDY, speaking to the University Association of the University of Liverpool, on May 18.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

OPENING the 149th session of the council on Tuesday last, Sir NORMAN WALKER referred to the loss of Sir Robert Bolam, who had served on the council since 1920, first as a direct representative for England and then as the representative of the University of Durham. "He made no long speeches, but everything he said was worth listening to. As chairman of business he found himself in a very congenial post. His mind was orderly, and most of the improvements in standing orders in recent years emanated from his fertile brain." No-one, he added, could have wished a more loyal friend and counsellor. As his successor in the representation of Durham University the President welcomed Mr. Ronald Bramble Green, professor of anatomy and dean of the school of medicine. Two former members had also passed away, both of them representatives of the Society of Apothecaries: Sir Hugh Beevor from 1900 to 1910, and Lieut.-Colonel C. T. Samman from 1929 to 1932.

REGISTRATION AND FINANCE

The Medical Register for 1939 showed, said the President, that on Dec. 31, 1938, the number of names in the register was 61,420, an increase of 1257 on the preceding year. The new names included 330 added to the colonial or foreign lists of the register in 1938. The new method of compiling the Students Register only came into operation on Sept. 1, 1938, and the first register in the new form was, therefore, not due for publication until August. Coöperation from the deans of medical schools would make it more complete than it had been in the past.

He was glad to report the substantial surplus of income over expenditure for 1938 of £3433. "We cannot claim to be as eloquent as some of our predecessors, but we may claim to be more business-like." In 1891–1900 the average length of the two sessions of the year was 14·3 days, in 1901–10 12·2, in 1911–20 9·8, and in 1921–30 9·5. In 1931–38 it was slightly over nine days; and for the last ten years the average surplus of income over expenditure had amounted to over £1300 a year. "Nothing has contributed so much to this satisfactory result as the readiness of the council of today to work overtime." Some of the duties imposed upon the council by the Medical Acts were expensive to discharge; that of maintaining and raising the standard of qualification was one of the most important. A new cycle of inspections of the final examinations was due to begin in 1940.

MEDICAL EDUCATION OVERSEAS

"At their meeting yesterday," the President continued, "the executive committee had before them a report by Prof. Stuart McDonald, whose authority to speak on questions of medical education is well known here, on an informal visit to the University of New Zealand which he paid early in the year in response to a cordial invitation from the authorities of the university. New Zealand, as I reminded you in November, 1937, took the lead in establishing reciprocal relations with us under Part II of the Act of 1886, which was applied to the dominion in 1887; and the degrees granted by the university have been recognised as being registrable here for over fifty years. The committee were, therefore, specially gratified, though not at all surprised, to read the favourable comments which Prof. McDonald found

it right to pass upon the courses of study and examinations after which the degrees are granted. His report will be forwarded to the university with suitable acknowledgments of the gracious reception accorded to him on all hands.

"The committee also received memoranda by Sir Richard Needham on further visitations which he has been so good as to make at their instance this year of the University of Hong-Kong, the King Edward VII College of Medicine, Singapore, and the University of Rangoon; and a note on an informal visit which he took occasion to pay in passing to the Ceylon Medical College (where he had made a visitation in 1936–37). We have learned to depend for accurate and up-to-date particulars of the curriculum through which diplomas recognised by us are granted in each of these institutions upon the public-spirited services of our visitor. It would be premature for me to anticipate the reports which he will make in due course on the two universities and on the college in Singapore; but I may go so far as to say at once that the committee are not likely to find in them any ground for suggesting an interruption of the recognition which has been accorded to the degrees granted by the University of Hong-Kong since 1913, and to the licence granted by the College in Singapore since 1916.

"The position in regard to degrees granted by the University of Rangoon is not equally clear. The Medical Council of India, who are entrusted with powers to inspect courses of study and examinations wider, or at least more specific, than those of the General Medical Council, had recognised these degrees shortly before the separation of Burma from India. The executive committee, in the exercise of the powers delegated to them by the council, have not withheld recognition from any qualifications granted by universities in India which the Medical Council of India have recognised; and in November, 1937, they recognised the degrees granted by the University of Rangoon with effect from the date in 1936 on which the degrees had been recognised in India. This decision was conveyed to the university with an intimation that recognition was accorded, in the words of the Act, 'for the time being'; and that its continuance would be dependent upon the nature of the report received by the committee from Sir Richard Needham on the visitation which has now been made. It is, I think, already apparent from his memorandum that this reservation was well advised. Further discussion of the special problems of medical education in Burma must be undertaken in the light of the report which will be made to the committee before it can be determined whether the degrees fulfil the statutory condition prescribed for recognition, namely, that they furnish a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery.

"It has been my fortune to have had exceptional opportunities of observing medical education in other lands, first in Austria, Bohemia, and Germany, and later in Canada and the United States of America, to which I went in a semi-official capacity. Also, as a missioner from the council, I twice visited, along with Sir Richard Needham, all the medical colleges, and several of the much more numerous medical schools, of India. I am not going to make any comparisons: each country has methods and differences of its own. All, I think, realise that a sound and broad general education should be the basis on which medical education should be built. Our early minutes show that our predecessors laid emphasis on this point, and advised that steps should be taken in that direction long before they were actually accomplished.

"The General Medical Council were constituted, as stated in the preamble to the Act of 1858, for the purpose of enabling the public to distinguish between qualified and unqualified practitioners, and Parliament thus laid on the council the duty of determining what a qualified practitioner should be. No country has reached perfection, but no-one whose name has been for over fifty years on the Medical Register will question that the practitioners placed on the register today are infinitely better qualified than those of his time.

"In my address in November last I referred to certain impending problems in connexion with the working of Part II of the Medical Act, 1886, and indicated that it was important that proposals for the alteration of any local law relating to medical practice in dominions or parts of dominions with which we have reciprocal relations should be communicated to us before legislative effect was given to them. This suggestion was made too late, for we learnt shortly afterwards that legislation had been passed both in New South Wales and in Victoria which appeared to prejudice the continuance of the application of Part II of the Act to these states. I caused this information and a summary of the effect of the new acts to be circulated to all the licensing bodies in this country, and asked them to give careful consideration to the position. Replies were received from the majority of the bodies, and in February were laid before the executive committee. The committee authorised me to communicate with the Dominions Office, and, after very full consideration of the whole matter, letters have been sent on behalf of the committee to the medical boards of New South Wales and of Victoria, and to the Universities of Sydney and of Melbourne, directing their attention to difficulties likely to arise.

"I believe that the origin of such difficulties may be found in endeavours to deal with the immigration into the dominions of medical practitioners who are not British subjects by means of legislation which purports to regulate the local conditions of medical practice. The General Medical Council have recently had occasion, especially in dealing with the registration of foreign dentists under the Dentists Act, 1878, to realise more clearly than ever that their concern is with standards of professional education, and not with political questions; and I venture to suggest that medical boards or councils elsewhere who are responsible for medical registration tread on hazardous ground when they seek, by means of amendments of Medical Acts, to deal with matters which obviously fall within the general province of the government of the country."

A vote of thanks to the President for his address was moved by Mr. W. E. Miles, seconded by Sir George Newman, and carried.

Prof. J. S. B. Stopford was elected chairman of business in place of the late Sir Robert Bolam. Mr. R. B. Green, representative of the University of Durham for five years, was introduced by Prof. Stopford.

The council then passed to the consideration of disciplinary cases.

BRITISH INSTITUTE OF PHILOSOPHY.—On Wednesday, June 7, at 5.45 P.M., at University College, Gower Street, London, W.C.1, Sir Sarvepalli Radhakrishnan will deliver the Iyer lecture. He will speak on the nature of truth. Cards of admission can be had from the director of studies at University Hall, 14, Gordon Square, W.C.1.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN AMATEUR JOURNALIST

IV

ACCORDING to the editor of a certain standard dictionary, well-bred persons of education and fair ability are able to define or understand 50,000 words, and are accustomed to employ some 20,000 or more in conversation and writing. It cannot be an easy matter, even if it is possible at all, to ascertain the extent of anybody's vocabulary, excluding of course the extreme limit in a little child, a mentally defective or an entirely uneducated person. But I should have thought such figures as those advanced by the editor a grotesque overstatement. I have seen it stated, on reasonably good authority, that Shakspere used 24,000 words, Milton about 13,000, although both knew many more. It has also been estimated that the average labourer from Dorset—why Dorset?—gets along with 300 words and I find it easier to think in such simple figures than in the tens of thousands which the editor of that standard dictionary flings about so lavishly. "Drugs are of no use" has been remarked on occasion, evoking the retort "not the slightest unless you know how to use them." To some extent the same may be said of words, although the attempt to acquire a large vocabulary must be on the whole the index of a desire to know the proper meaning of the words and, therefore, their correct and advantageous employment.

* * *

If one may judge from ordinary conversation, is it likely that the average "well bred person of education" knows the meaning of more than 8000 words and uses more than 5000, excluding of course purely technical terms? Every advance in knowledge means an appropriate new vocabulary so that daily accretions to our language are demanded. Every profession, every trade, every invention has its technicalities, often a language which to the uninformed is completely meaningless. Surely our own profession must have easily the most extensive of all technical phraseologies. Dictionaries of medical terms claim to contain something of the order of 80,000 references. What percentage of this stupendous total is utilised by the majority of our profession? Dip into it for some choice examples: hysterostomatocleisis; anakinetomeric; onomatopoiesis; maieusiophobia; hyperneurotization; autarcesiology; tsutsugamushiasis; synchopexia. One learns with relief that the last is "the same as tachycardia." In the preface to the 18th edition of Dorland's American Illustrated Medical Dictionary (1938) it is claimed that 3000 new words have been added since the previous edition (1935): 3000 in three years; nearly three a day! No wonder that some of us who would doubtless be convicted of an inferiority sense are afraid to go away for a week-end lest during our absence we shall lose some advance in medicine which we shall be unable to overtake.

* * *

In this connexion it is natural to consider the employment of proper names in medicine. Whilst a relatively small number are an integral part of our knowledge and could not possibly be eliminated, it is not remarkable that a protest is raised from time to time when a fresh sign or syndrome, a new test, a special instrument, a modification of an operation or variation in some form of treatment imposes an additional burden on the memory. Blanchard scathingly described the "syndrôme du baptème" as a neurosis with the absolutely characteristic symptom that the victim—usually a medical practitioner—is seized with an uncontrollable impulse to discover some extraordinary disease and to bestow his name upon it. And to this neurosis a not inconsiderable number of our profession display a high degree of susceptibility and morbidity. To the *Annals of Medical History* for January, 1937, Sir Humphry Rolleston contributes a fascinating article on the subject of eponyms, a comprehensive survey with all the charm and learning we expect from his pen. He quotes the number of eponymous terms in Dorland: if one includes every reference to which a proper name is attached the number must run into thousands. I counted 776 under "sign" alone! Sir Humphry defends the eponym on certain grounds. Subsequent research may show that the exact nature and causation as originally denoted are incorrect; so that "Gull's disease" is preferable to "myxœdema" and "Cushing's syndrome" to "pituitary basophilism." Again, the pathological description may be inconveniently cumbrous. Compare "Raynaud's disease" with "local asphyxia and symmetrical gangrene of the extremities."

Drawbacks are in many instances obvious. Mostly the reference is, to say the least of it, meaningless. Priority of description is not ensured with any certainty. Sir Humphry points out that the Stokes-Adams form of heart-block was reported by three previous observers and it is not surprising that the same condition is claimed by many different countries and identified by a corresponding name. Everybody in the profession in the British Isles is familiar with "Graves's disease" although there may be some doubt whether it should be Grave or Graves. A lesser number recognise "Parry's disease" and are aware that on the Continent toxic goitre is invariably identified with K. A. von Basedow. I wonder how many know that in Italy they describe it as "Flajani's disease" and I judge that only the most erudite (to whom such a study almost smacks of an obsession) would be familiar with the claims of Stokes, Demours, Marsh, Parsons and Begbie in the same connexion. Argyll Robertson, Cheyne-Stokes, Austin Flint, Brown-Séquard, Stokes-Adams are hallowed names, although an impish examiner can generally score off a student by inquiring whether one observer or two are intended. I have myself encountered the belief that a possible occupation-disease was designated by "Baker's cyst" and that "Parrot's nodes" derived recognition from resemblance to the beak of a bird. ("Writer's cramp" is perhaps too thoroughly established to justify the attempt to fasten upon an unsuspecting victim the acceptance of a possible eponym in "Scrivener's palsy.") I confess to a resentment in encouraging a flippancy when accepting "Jones's cock-up splint" and "Cock's peculiar tumour"; but too much of our scientific nomenclature has received the cachet of antiquity to assume as the avoidance of an invidious distinction the well-known recommendation of the late Lord Fisher.

The out-and-out pedant is admittedly a nuisance. If he desires to talk like a book he will begin by being distrusted and end by being thoroughly detested. The man who uses the expression "our mutual friend," which was good enough for Dickens, is likely to be annoyed rather than grateful or even interested if he is informed that the construction is nonsense. To speak and write fairly good English is a not over-laborious occupation: to speak and to write what the pundits would accept as correct English seems to demand a nightmare of study. There are books on the subject; one which is at my elbow has 21 pages occupied with rules for the correct use of "shall" and "will." Twenty-one pages of complicated instruction and examples for an even chance! You are as likely to be correct by guessing. Did anybody ever write perfect English? It is not difficult to pick holes in Carlyle and Macaulay, to say nothing of Scott and Meredith.

Apart from the condemnation of preciosity, a word is pertinent in regard to the abuse of slang. I say abuse, not use, because an occasional indulgence is a not too generous concession to gregariousness and to have no slang at all is as bad as to have no redeeming vice. Recruits to our language hail from every section of society and the smart expressions of one class are the slang contributions of another. Some are transferred from such exalted quarters that we average beings are dazzled into admiration and forget the unworthiness of their origin. But abuse introduces the dangers of slovenliness and inexactitude—dangers only too prevalent in our profession, in which the habitual slang addict will never lack for company, in which indeed the stylist or purist is likely to gain more ridicule than respect. I was a dresser to a famous surgeon of his day and early in the course of my duties I informed him in the affable manner of one brother of the lancet to another that such and such a specimen had been sent to the "path. lab." "The path-o-log-i-cal lab-or-a-tory," he corrected, with unctuous and punctilious demarcation and would-be devastating reproach. The lesson was not forgotten. Two years later, when his house-surgeon, I thoroughly drilled my dressers so that when the great man asked one of them colloquially "Anything in the chest, anything in the lungs?" he was staggered into inarticulate fury by the quiet rejoinder "The usual thoracic viscera, sir, and air in the lungs."

The cultured layman learned in the classics is contemptuous of the whole of our phraseology, many terms in which are a mixture of Latin and Greek with elements which long ago parted company from their original meaning. Even if we have to offend him we have no remedy; we have to accept our current language. But much of our slang is lamentable, although it may survive with the defence that it saves time and trouble and is generally (not always) unambiguous. Nobody, for example, ought to worry about the distinction between an "infrequent" and a "slow" pulse, for although there *is* a difference it is only a man intoxicated with the madness of superlative accuracy who would desire to advance it. And to some extent the same may be said about the familiar pronouncement that the patient has "no temperature." We always know what is meant and do not need reminding of the absurdity that his temperature cannot be absolute zero. Still, it is a pleasing little courtesy to the ears of the more particular to announce the absence of pyrexia or fever. But much of our medical gibberish is unnecessarily inelegant. Life may be short and art fleeting but neither to such an extent that we need flu, gynæ., primip., abdo., pul. tub., auric. fib., chronic appendix, gastric case, pronounced belly, a cardiac, teeth O.K., he was bismuth-mealed, Babinski present, I put her on iron, she had a Cæsar., I did a P.R. Odd tenths of seconds saved, but what are you going to do with those tenths?

As a really good New Year resolution (which could be adopted in May) we all ought to eliminate the verb "to get" as much as possible. Consider this ugliness from a leader in our midst—of course the context is paraphrased. "In this condition you do not get perfect expansion, you get irregularities and you are apt to get a tendency to bronchitis which in the course of time gets worse." This shows the perpetuity of the early habit in a student's training, for when one asks for the description of a lesion, in the huge majority of cases the construction proceeds upon the lines—"You get." I may resent the imputation when he is referring to hobnails in the liver or reject the absurdity if he assures me that "you get hæmorrhage from the vagina." "You get" serves all purposes—as for "one observes (or finds)" or "there is present (or occurs or develops)." In fact there exists a host of appropriate choices from our rich vocabulary which like verbal misers we keep hoarded up between the boards of dictionaries, content to subsist on a battered or counterfeit phraseology.

* * *

And the delight in abbreviations! Perhaps we are as a nation peculiar in a penchant for multiplying and utilising the letters which its citizens are permitted to adopt as indicative of the distinctions and honours that they have gained or acquired. A high-court judge has sardonically pointed out that the payment of a few guineas appeared to be the only qualification for election to the fellowship of certain societies with the privilege of putting a number of letters after one's name. In some instances, I suppose, the qualification is even more slender than that. How many people know what an M.B.I.P.S. is? Most are familiar with I.O.U., but I.O.P. has an entirely different significance. Beware lest your friend with the last-named distinction is inadvertently addressed as I.O.O.P. So far as I can see there is nothing to prevent one from starting a society of any kind, say "The Metropolitan Association for Encouraging Ambidexterity in Midwives" and associating with this, fellowship, membership, associateship, with corresponding letters to follow the name.

What must the layman make of our honourable professional adornments? He has to discover that a bachelor of surgery may be a B.C., a B.Ch., a B.Chir., or a B.S. The last he probably confuses with B.Sc., the second must puzzle him because of its clerical appearance and the first he probably refuses to believe. What does he think of us when we call most of our doctors of medicine M.D.s but a select few D.M.s? Don't we know our own minds? M.R.C.S., L.R.C.P. he encounters so frequently that he masters their significance, and to F.R.C.S. he accords a respectful recognition of superiority. But what does he make of L.M.S.S.A., of L.R.F.P.S., of M.M.S.A.? I am not at all sure that the majority of us would be confident in respect to B.A.O., L.A.H., L.S.Sc. In our jargon we have a kind of recognised notation: P.R., W.R., H.S., H.P., R.M.O., Tb or T.B., T.A.B., K.L.B., C.O.A., pH, F.H., B.B.A., L.O.A., R.O.P. and a host of others. There may not be much danger of confusion although I found that of two consecutive students selecting the abbreviation P.A. one meant pernicious anæmia

(*Continued at foot of next page*)

LETTERS TO THE EDITOR

THE PSYCHOLOGIST IN WAR-TIME

SIR,—Your leading article last week ignores the experience gained during the Great War in the treatment of the gross hysterical disorders, which were grouped together under the misleading title of "shell shock" and formed a large majority of the war neuroses. There is no doubt that similar disorders will occur in any future war, not only among soldiers but also among the civilian population as a result of air-raids. It was not until the third year of war that really satisfactory methods of dealing with the war neuroses were discovered. Even in 1916 some of the war neuroses were still regarded by many as organic in nature, and it was not until the following year that their true nature and proper treatment became widely, though still far from universally, recognised.

The treatment consisted in simple explanation, persuasion and re-education, sometimes reinforced by suggestion with or without hypnosis, though all forms of suggestion were generally discarded as the medical officer became more experienced. In almost every case of hysterical paralysis, contracture, tremor, blindness, deafness, mutism, aphasia and vomiting, whether recent or of many months' or even two or three years' duration, complete recovery followed a single treatment, which might last anything between five minutes and two or three hours. When the treatment was carried out at a casualty-clearing station many soldiers were able to return at once to the front line. Those treated in England were soon fit enough to return to duty at home or to civilian life, and there were very rarely any residual nervous symptoms requiring further treatment. Successful application of these rapid methods of psychotherapy did not depend upon any special psychological or neurological training of the medical officers. Of the ten who worked with me at the Seale Hayne Military Hospital, with its 300 beds for functional nervous disorders, only one had had any previous training; yet all became highly efficient within a week of joining the staff. Large numbers of British, Dominion and American medical officers came for fortnightly courses of instruction, which proved amply sufficient for learning the technique of the simple methods of psychotherapy required for the war neuroses.

Modern methods of psychotherapy, which generally entail prolonged treatment, would be quite useless for the treatment of hysteria under war conditions, when it is essential to get very rapid results. The anxiety neuroses, which are of course common enough in war-time, require quite different treatment, and no doubt the well-trained psychotherapist is the right man to deal with the severer forms of these, although any intelligent doctor is quite competent to treat the minor forms. In providing for the treatment of psychological disorders in war-time the services of all those who gained experience during the Great War should be utilised, and the training of the young psychotherapist should include instruction in the methods which were found so successful twenty years ago, even if the views upon which they were founded are regarded by modern standards as being old-fashioned, for they certainly were extremely successful. I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, May 22.

EQUIPMENT OF INDUSTRIAL CLINICS

SIR,—In answer to Dr. Stewart's letter in your last issue I should like to explain that the actual words used in my address were: "As a preventive measure all large factories should have on their staff a medical officer with adequate facilities, including X-ray facilities." With the first part of this statement Dr. Stewart agrees; and he will, I feel sure, agree also that, where the possibility of pulmonary disease in dusty trades is concerned, X-ray investigation of the chest must necessarily be included among the facilities. Where a specific occupational lung hazard is concerned it would obviously prove an economic proposition to have such facilities on the spot. I quite recognise, however, that every factory engaged in a dusty trade cannot have X-ray apparatus on the premises. Such a question is purely a matter for the individual factory management.

Dr. Stewart concedes that the industrial medical officer has a part in the prevention and detection of lung tuberculosis in industry, and he approves of the policy of extension of medical services in the factory. I hold the view that the medical officer in such cases has adequate facilities, including those for X-ray examination, if he is able to refer his cases to chest clinics and hospitals in close proximity to the factory. Dr. Stewart and I are, therefore, I feel in substantial agreement.

I am, Sir, yours faithfully,

Weymouth Street, W.1, May 22. PHILIP ELLMAN.

INSULIN SHOCK AND CONVULSION THERAPY IN THE TROPICS

SIR,—The observations by Dr. Hoff and Dr. Shaby (April 8) on my paper on shock therapy in Indian patients (March 4) require a reply.

They say that "the climatic conditions of the south of Iraq are not very different from those of India." But India is a continent, and it is more appropriate to speak of parts of India rather than the whole. Iraq is probably comparable to parts of northern India. The experiences I recorded refer only to patients in South India, which has a high temperature all the year round, and is not subject to the extremes of the north. The diet of South Indians, which is largely vegetarian, is inadequate and non-nutritious. They are small, spare, undernourished and weak; they are also emotional and restless, and have a high average intelligence. With such a background, hyperactivity is more common than retardation or depression; it is manifest either as a meaningless excitement, a maniacal exaltation, or as delirium. This tendency to hyperactivity was commented upon by Dr. Mapother, when he visited the Bangalore Mental Hospital in January of last year. Very often the patients on admission are

(*Continued from previous page*)

and the other paralysis agitans. Trouble may arise because of the use of a special notation which has a purely local significance. I was once puzzled to identify the artistic glorification of a young man described to me as an R.A. until I discovered this stood for resident anæsthetist, and the I.M.A., which I had perhaps naturally supposed to indicate an intern midwifery assistant, turned out to be a master of engineering—Magister in Arte Ingeniaria.

Next month "Peter Quince" will be responsible for these columns.

found to be dehydrated and exhausted, and it is a standing order that, unless there is a definite contra-indication, they shall be given a litre of intravenous saline and saline and glucose daily for the first few days. In such patients one has to go slow with any form of shock therapy. More than two injections of Cardiazol per week are neither necessary nor advisable. Mental deterioration is correlated with frequency in fits, and by inducing frequent convulsions in mental patients we are merely hastening a dementia.

As regards insulin shock we suffer from several disabilities in India. Owing to the present lack of a drugs act one is never sure of the strength of the insulin received. Small doses have been found to improve the general health, but for shock therapy large doses are necessary and with our patients uniform results are not produced. The mental disorder itself causes imperfect regulation of blood-sugar and the variations are erratic in half-starved dehydrated hyperactive patients. It has been found that a patient who reacts with hypoglycæmia to, say, 30 units one day does not react to even 60 units the next day, but reacts to 15 units on the third. And since the shock does not follow the injections immediately, as does the cardiazol convulsion, it is not always easy to regulate the dosage. Several of my patients have developed hypoglycæmia not an hour or two after the injection, as is usual, but many hours later, during the night and during sleep, insulin having been administered in the morning. So although insulin shock has proved of undoubted benefit in some cases, we have been compelled to restrict ourselves to relatively safer treatment. Where every other form of therapy has been tried without benefit, and the clinical and economic conditions justify any risk, insulin may be tried.

I am, Sir, yours faithfully,

Bangalore, May 11. M. V. GOVINDASWAMY.

SHORTAGE OF NURSES

SIR,—After an experience of over fifty years on the resident and visiting staff of London and county hospitals, I am convinced that the greatest gain to nursing, and the right way to meet shortage of nurses, would be that in all hospitals women and children should be nursed by women, while men and big boys should be nursed by men. In 1887–89 I was resident in a county general hospital where male nurses were employed for male patients; and the four years of the Great War confirmed my belief that men are best nursed by men. Each sex should carry its own responsibilities, and no-one can gainsay that there is just as good nursing capacity in a "he" as there is in a "she." Nursing is the first line of assault against disease; it is up to the medical profession to see that this line does not fail for lack of numbers. There is no more reason for a woman to nurse a man than for a man to nurse a woman. If even one hospital could be induced to give my plan a trial, I am confident a follow-on in a large scale would relieve the present scarcity of candidates for nursing.

I am, Sir, yours faithfully,

Worthing, May 22. W. BURROUGH COSENS.

*** Last week the matron of the Leicester City General Hospital told the Leicester County Nursing Association that male nurses are now being trained both at her own hospital and at the Leicester Royal Infirmary (*Leicester Mail*, May 20). Their training, she said, is the same as for women probationers, but they are not resident.—ED. L.

WOMEN ON THE G.M.C.

SIR,—The Medical Women's Federation have, during a number of years, given considerable thought to the question of the representation of medical women on the General Medical Council. There are now more than 6000 women on the Medical Register, and it seems to the federation extremely desirable, and indeed only equitable, that medical women should be represented on the body responsible for the administration of the Medical Acts which affect the profession as a whole. As students, women follow the same curriculum as men; as practitioners, they are subject to the same rules of professional conduct, and they may equally become involved in disciplinary cases. Further, many women come before the council as witnesses in penal cases, and the federation hold the view that it would be advantageous if the evidence were weighed by women doctors as well as by men.

The present constitution of the General Medical Council makes it extremely difficult for a woman to become a member. It is unlikely that universities or examining bodies would select a woman as their single representative, nor is it probable at present that the Privy Council would advise the King to nominate a woman doctor. The only way in which medical women can hope to secure representation is by election as one of the seven practitioners chosen by the whole profession in England and Wales. Two elections for such places are due to occur at the end of the present year, and therefore the federation desire to remind the profession of the claims of women to a place on the council.

I am, Sir, yours faithfully,

JANET M. CAMPBELL,
Hon. Secretary, Medical Women's Federation,
May 22. 9, Clifford Street, London, W.1.

SEX-INCIDENCE OF CANCER

SIR,—Sir Arthur Hurst's article on cancer of the alimentary tract published in your issue of March 11 develops a theory of cancer causation and supports it with statistical matter. I venture to suggest however that the statistical methods used are open to question.

In his paragraph on sex-incidence Sir Arthur, touching on his theory of extrinsic and intrinsic factors in carcinogenesis, quotes the deaths from gastric cancer expressed as a percentage of those "who developed cancer in 1935." He holds that males and females have an equal susceptibility to the intrinsic carcinogenic factor and that while the extrinsic factor for gastric cancer may vary in different countries, it is roughly the same for both sexes in any one country. Hence the gastric cancer mortality should be the same; but his figures are 22·5 per cent. males and 16·6 per cent. females (1935). This discrepancy he explains by suggesting that a considerable part of the female cancer-susceptible population is carried off by cancers of the breast and uterus at an age-period (45–55) earlier than that at which gastric cancer is commonest (60–70). The extrinsic factors have therefore insufficient time to act. Accordingly, by a simple calculation, he adjusts the figure 16·6 per cent. to 24·9 per cent. by making an allowance for those females who, had they survived, would have developed gastric cancer.

This letter asks Sir Arthur to justify a calculation, to an accuracy of 1 in a 1000, made in accordance with a theory which he seeks to support with those same figures. The problem becomes clearer if, instead of taking a percentage on an indeterminate base (since no-one knows at what date cancer first develops, nor is it notifiable when diagnosed), we take

deaths from gastric cancer by age-groups (the figures in parentheses give the death-rate per million estimated population 1930):—

ENGLAND AND WALES: DEATHS FROM CANCER OF THE STOMACH

Registrar-General's Annual Statistical Survey, Part I, 1930

Ages	0–	15–	25–	35–	45–	55–	65–	75–
M.	0 (0)	8 (2)	65 (20)	301 (116)	999 (434)	1849 (973)	2114 (1922)	820 (2050)
	(per million living)							
F.	0 (0)	4 (1)	62 (18)	244 (81)	686 (254)	1249 (595)	1859 (1430)	1137 (1862)
	(per million living)							

All ages standardised { Males = 233·7 per million; Females = 162·8 „

Can Sir Arthur explain how the substantially lower female rate at all ages accords with his theory? Would he make it clear how his figure of 24·9 per cent. was calculated and how he would apply the correction to the age-groups shown above?

I am, Sir, yours faithfully,

Derby, May 19. BARON RUSSELL.

BLOOD AND VULCANITE

SIR,—Last year I was appalled by the number of edentulous or badly septic mouths seen during six months spent in the hospitals of London. My impression was that dental conditions in Canada were far better than in Great Britain. Hence Dr. Leslie Cole's letter in your issue of April 29 interested me. To test my impression I have examined the mouths of 20 consecutive patients under forty admitted to the general surgical wards of the Royal Victoria Hospital. Using Dr. Cole's classification the results are as follows (Dr. Cole's figures in parentheses):

	Patients
No teeth; dentures upper and lower	0 (4)
No teeth in upper or lower jaw; one complete set of dentures upper or lower	1 (7)
Gross dental sepsis; few extractions and no dentures	4 (1)
Some teeth in both upper and lower jaws and efficient dentures	0 (1)
Efficient without dentures and no gross dental sepsis	15 (7)

I pass on these results without comment, except to note that in this country, even among the hospital class, there is a far greater consumption of milk, fresh fruits and fresh vegetables.

I am, Sir, yours faithfully,

ALLEN TEMPLE.

Royal Victoria Hospital, Montreal, May 10.

CLINICAL SENSE AND CLINICAL SCIENCE

SIR,—In view of Prof. Ryle's remarks on the "clinical sense" I offer the following correspondence without comment.

1. *Letter presented by patient at hospital.*—"This patient has been having injections of anahæmin 2 c.cm. and it is recommended that she should continue with them."

2. *Letter from hospital pathologist to the doctor.*—"This patient has given me your letter recommending injections of anahæmin. I should be obliged if you could let me have some further information in regard to her. I presume the injections were given for pernicious anæmia. If so could you kindly let me have details as to the data on which the diagnosis was made."

3. *Reply from doctor.*—"Thank you for your letter of yesterday about the above-named. She was admitted to the convalescent side of the —— Hospital and was there for three weeks. She was an obvious pernicious anæmia (clinically). As we have no pathological department no blood-counts were made. She received five injections of anahæmin in the three weeks and showed considerable improvement."

4. *Reply from the pathologist.*—"The blood of this patient shows Hb. 25 per cent. with red cells 3,480,000 per c.mm., giving a colour-index of 0·35. Mean diameter of red cells 7 mμ. This is very evidently not the picture of pernicious anæmia. I think that the benefit which the patient derived from her stay at —— Hospital must be attributed to the rest rather than to the anahæmin. She is suffering from a gross degree of mitral stenosis."

I enclose my card herewith but for obvious reasons request you to permit me to sign myself

May 20. C(L)YNICUS.

MEDICINE STAMP DUTIES

SIR,—It cannot be the intention of the Chancellor of the Exchequer that the repeal of the Medicine Stamp Duties and the patent medicine vendor's licence should be prejudicial to the health of the community. It is just as clear, however, that the removal of all restrictions from the sale of medicines, excepting the small proportion of them which contain listed poisons, and the withdrawal of that encouragement which the earlier legislation gave to the proprietary medicine manufacturers to disclose the composition of their preparations may be followed by (1) a large addition to the number of vendors, already largely in excess of public need, (2) the use of slot machines for the delivery of packed medicines, and (3) a cessation of the practice of disclosing formulas. Cannot some corrective be devised for the evils which are likely to follow the repeal? Perhaps the Chancellor could give a hint to the Home Secretary to use the powers which he has under the Pharmacy and Poisons Act to make additions to the Poisons List and thus give the public some new safeguards as an offset against the removal of the old ones.

I am, Sir, yours faithfully,

May 19. GALEN.

"... In most parts of the animal kingdom the absence of the competition of natural selection seems to have disastrous effects on the qualities of the animals. The fauna of oceanic islands do not seem capable of competing with later importations from continents. The lizards of the Galapagos are being killed out by the competition of pigs and goats, and the marsupials of Australia have been beaten by the rabbits. Even as to those rabbits I would venture the guess that the absence of the normal struggle for life during a century, as indicated by their rapid multiplication, has led to degeneration, so that an Australian rabbit, if brought back to England, would have little chance in the competition with its untransported cousins. Have we any right to think that humanity can escape the same tendency? I believe that investigations carried out under the auspices of this society show the same trend even during the very short period for which data can be obtained. If then civilization is the condition in which natural selection is inoperative for humanity, it must inevitably lead to degeneration, which for men means decay of the intellect, and such decay must surely lead to a collapse of the civilization. The principal aim of all of us, whether eugenists or not, is I suppose to maintain or improve our present state. ... But there is a more important need for a eugenic policy even than this, for something drastic must be done even to keep up to our present condition. We shall have to run rather fast even to stay where we are, and much faster if we want to get anywhere further on."—C. G. DARWIN, F.R.S., Galton lecture to the Eugenics Society, *Eugenics Review*, April, 1939, p. 14.

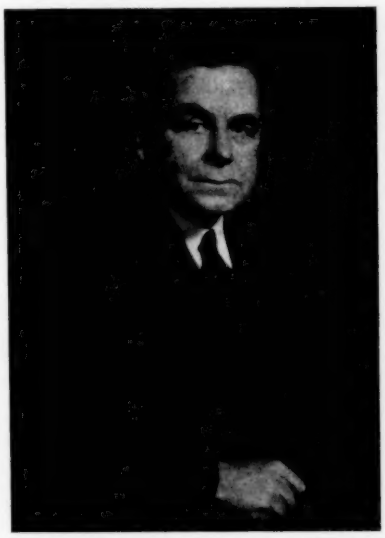
OBITUARY

CHARLES HERBERT FAGGE

M.S. LOND., F.R.C.S., HON. F.R.A.C.S.

By the death of Mr. Fagge in Nuffield House on May 19 at the age of 66, Guy's Hospital loses a valued member of its consulting staff, and British surgery one of its leaders.

Charles Herbert Fagge was born in 1873, the second son of the late Dr. Herbert William Fagge of Lutterworth. The family have a long association with medicine and with Guy's, Fagge's father having been a student there, his uncle Charles Hilton Fagge a physician, and his great-uncle John Hilton one of the hospital's most famous surgeons. It was natural therefore that he should follow his elder brother to his father's hospital, and his career was from the first distinguished. In 1895 he gained the gold medal and exhibition in anatomy in the University of London, and two years later he graduated with a gold medal and exhibition in medicine, and a gold medal and moiety of the exhibition in surgery. In 1898 he obtained the mastership in surgery at the university and the fellowship of the Royal College of Surgeons of England.



[*Elliott & Fry*

After this Fagge held a number of junior posts at the hospital, two of which may be cited as having influenced particularly his future career. As editor of the *Guy's Hospital Gazette* he held a position which, though unconnected with the medical school, is one of considerable importance; the *Gazette* has a circulation and a function beyond that of a hospital journal, and the editor has a responsibility that is rarely interfered with. The second influence at this period was his long connexion with the anatomical department, first as assistant demonstrator and then as senior demonstrator—a post which involved the whole teaching of anatomy and embraced duties now performed by a whole-time anatomist holding a university appointment. Throughout his subsequent career Fagge kept his anatomical outlook. It was rumoured that he never went to bed without reading ten pages of Cunningham, and whether or not this be true, he was able in his ward rounds to discuss in detail the anatomical aspects of any case, and took a delight in confounding those with recent anatomical honours over some point of detail. Later he was for many years an examiner in anatomy at the Royal College of Surgeons, and his "Pocket Anatomy" went through nine editions.

When Fagge was appointed assistant surgeon to Guy's, he was also put in charge of the ear department, and with characteristic thoroughness he prepared himself for this work by postgraduate study at Berlin and Vienna, and by working as clinical assistant at the Royal Ear Hospital, Soho Square. He conducted this department with great efficiency, but never became particularly attracted to the subject, and did not, after relinquishing the appointment in 1909, retain his connexion with otology. His senior colleague was Arbuthnot Lane, then making his anatomical researches on the skeleton, at the back of his house in St. Thomas's Street, and working at those ideas that afterwards made him one of the pioneers of aseptic surgery, the best craftsman of a generation, and the founder of modern orthopædic technique. Fagge was to Lane more than a junior colleague. With a loyalty that was one of his most characteristic traits he threw himself heart and soul into Lane's work, and for many years the two collaborated with a harmony and unity of aim that is seldom seen. This association coloured Fagge's surgical outlook probably more than anything else, and accounted for his particular interest in the somewhat opposed subjects of the surgery of the skeleton and major abdominal surgery. It made him also a gentle and careful operator, attentive to every technical detail; and because he never allowed his standard to lapse, but would always expound his actions, however long the case and however tired he might be, he was for many years sought by the best students for the appointment of dresser.

Fagge was also a magnificent teacher of surgery, and stood out among his contemporaries by the scholarly nature of his expositions. Surgery was his passion and he worked constantly at it, learning not alone by reading, but by contact with surgeons from other centres, on the court of examiners of the college, on the council of the Association of Surgeons (of which he later became president) and on the editorial board of the *British Journal of Surgery*. Few who attended his rounds will forget his accurate phrasing and varied approach—sometimes through a discussion of contemporary British and foreign literature, sometimes through his own clinical experience, and sometimes through an excursion into anatomy or biochemistry. His teaching was especially appreciated by senior and postgraduate students, and above all by candidates for the final fellowship.

To Guy's men of many generations he represented the hospital; returning there they might find new buildings and changes in the staff, but Fagge was the same. As a young man he had the earnest abstracted expression of middle age; as an older one, indeed to the time of his retirement, he kept the rounded features and thick dark hair of youth. He was reserved, but to those who knew him the most charming of friends. He had an intense loyalty and an unswerving sense of duty. He always placed the interests of his colleagues, his hospital, and his college above his own, and was punctilious in attendance at committees, even those of minor importance. His obvious sincerity and disinterestedness carried conviction, and his tenacity usually won the day in debate.

Fagge was elected a member of the council of the College of Surgeons in 1921, and was twice re-elected, finally retiring in 1938. He was an examiner in

anatomy for ten years, and a member of the court of examiners for another ten. In 1928 he gave the Bradshaw lecture, on axial rotation, and in 1929 he was elected vice-president of the college. In 1932 he was entrusted with the mission of delivering to the newly formed Royal Australasian College of Surgeons the great mace presented by the Royal College of Surgeons of England. While in Australia he delivered the first Syme oration, and was awarded the honorary fellowship of the Australian college, and the honorary degree of M.D. of Melbourne University. In 1936 he was appointed Hunterian orator at the Royal College of Surgeons, and delivered a discourse, John Hunter to John Hilton (printed in THE LANCET of Feb. 22, 1936), in which the major influences of his life—his family, his hospital, his college—were combined to produce a memorable oration.

He leaves a widow, a son and three daughters.

RALPH PAUL WILLIAMS

M.D. LOND., M.R.C.P., D.P.H.

Dr. R. P. Williams, medical officer of the Board of Education and lecturer in public health at King's College Hospital, died at his home in the Hampstead Garden Suburb on May 18, after a long and painful illness borne with cheerfulness and great fortitude. His death, so soon after retirement, will sadden his many friends in the school-medical and public-health services.

Born in 1874, the son of the Rev. Dr. Ralph Williams, vicar of St. Luke's, Kilburn, he was educated at St. Paul's School and King's College. His student career was brilliant. He won almost every possible scholarship and medal at the college, and on examination he was first in first-class honours (with gold medal in physiology) and first again (with exhibition and gold medal) in materia medica at London University. After taking his degree in 1896 he was house-surgeon to Sir Watson Cheyne (whose two prizes in surgery he gained) and went on to take honours in surgery at the B.S. examination. He also held house-appointments at the Royal Free Hospital, the Great Ormond Street children's hospital, and the asylum at Broadmoor. At King's College Hospital he became medical registrar and tutor. After five years in private practice with Dr. Weaver Adams at Slough, he was appointed in 1906 the first school medical officer for Sheffield. Here he was a pioneer, organising the first open-air school in the city, a residential school for children with surgical tuberculosis, the first school clinic for minor ailments, and school shower-baths. These things, though now found in any efficient school service, were then daring innovations. He was also deputy medical officer of health for the city and in that capacity visited Holland and Germany to learn about school baths, open-air schools and dental clinics. In 1907 he became professor of public health in the university, but in 1914 he accepted an invitation to join the medical staff of the Board of Education under Sir George Newman.

During the late war he served with the R.A.M.C. with the rank of captain at the Dardanelles, in Egypt and in France. In 1918 he was recalled to England to be officer at the Air Ministry with the rank of lieut.-colonel, R.A.F., and charge of the medical arrangements of all flying stations in the United Kingdom. Demobilised in February, 1919, he returned to the Board of Education as divisional medical officer. In 1927 he became lecturer on public health at King's College Hospital, and in 1934 chief examiner in hygiene, which made him responsible for the teaching of hygiene in training colleges for men. He represented Great Britain at the international congress on open-air education at Brussels in 1931, and again at Bielefeld and Hanover in 1935, being appointed vice-president of the international committee. His own contribution to medicine is to be found in many papers on open-air schools, mental deficiency and the prevention of tuberculosis. He was a devoted fellow of the Zoological Society and spent some of his happiest hours in its gardens and laboratories.

Great as were Williams's intellectual powers, writes a colleague, they were exceeded and to some extent concealed by his spontaneous gaiety of disposition and by his kindness of heart which endeared him to workers of every kind in the educational world. An omnivorous reader, he could hold his own in any discussion, but without the slightest trace of rancour. He was equally popular with colleagues at the Board of Education and with students, teachers and the officials of the various authorities with whom he came in contact. In 1901 he married Mabel Grace, daughter of Mr. J. J. Wheat, solicitor, of Sheffield, and had a son and two daughters. Apart from his long illness, which clouded the last few months of his service, few men were happier in their own life and work or contributed so fully to the happiness of others.

E. R. TOWNLEY CLARKSON

M.A. CAMB., M.R.C.S., DEACON C.E.

Mr. Townley Clarkson, who died in London on May 18 in his seventieth year, will be remembered as a tireless worker in the campaign against venereal disease. His approach to the task was unusual. He went to Selwyn College, Cambridge, in 1889 and after taking a classical degree and winning a scholarship became a deacon of the Church of England in 1896, and was for two years curate of St. Thomas's, Stepney. It was not until the opening year of the late war that he took a medical qualification, and in the same year he joined the National Council for Combating Venereal Diseases (now the British Social Hygiene Council) and served on its executive and medical committees. All through the war years he was giving lectures to officers and men of the various commands—Eastern, London, Southern and Aldershot—and for the three years 1917–20 was hon. medical secretary to the council. He was particularly dissatisfied, as well he might be, with the then standard of treatment of gonorrhœa, and in our own columns and elsewhere was insistent on the assiduous care required for its elimination. Later, when his viewpoint but not his keenness had somewhat changed, he transferred his allegiance to the National Society for the Prevention of Venereal Disease, and finally he became hon. secretary of the Medical Society for the Study of Venereal Diseases. He held posts in the venereal departments at various hospitals, the West London, St. Paul's Hospital, Endell Street, and then the London Hospital. One of his colleagues there writes:

"Clarkson first came to the London during the war period as the associate of the late Mr. Frank Kidd in the department known as V.D. II. From that time until the department became dissociated from the hospital in 1930 he was well known to successive generations of London students whom he instructed in the principles and practice of his special subject. As secretary of the Medical Society for the Study of Venereal Diseases from the time of its inception in 1922 until his death, and as co-editor of the *British Journal of Venereal Diseases* from 1925 until last

year, he was liked and respected by an ever-widening circle of friends and acquaintances at home and abroad who appreciated his unobtrusive but constant efforts to ensure the success of these undertakings. All who knew him could not fail to pay tribute to his sincerity and to the generosity of spirit which made him a source of sound advice and encouragement to his associates and assistants. He was never known to speak ill of anybody. In his work he was able and conscientious; an excellent clinician and a sound teacher. During the closing months of his life the possibility of progressive loss of vision, although bravely faced, was a source of anxiety and those who knew his mind may find consolation in the fact that he was overtaken by what he would certainly have regarded as the lesser calamity."

CHARLES THOMAS SAMMAN

M.R.C.S., L.S.A., LT.-COL., R.A.M.C.

Colonel Samman, a former master of the Society of Apothecaries, died at Ventnor, Isle of Wight, on May 17, at the age of 73. He was the son of Alban Samman of Deddington, Oxford, and was educated privately and at the London Hospital. He qualified in 1888 and then entered the R.A.M.C., in which he served for twenty years. On retiring he was called to the bar by the Middle Temple and joined the south-eastern circuit, and he also practised at the North London Sessions and the Central Criminal Court. Samman became a freeman of the Society of Apothecaries in 1888 and was promoted to the livery in 1891. He was elected to the court of assistants in 1921 and became master in 1928. He was re-elected in 1929, when H. J. Ilott was unable to serve owing to ill health, and again in 1930 when Buchanan's duties at the Ministry of Health prevented him from accepting the post. To commemorate this long term of office Samman's portrait by F. W. Elwell was presented to the society by a number of subscribers and now hangs in the hall.

In 1928 the society was faced with the necessity of raising £20,000 to repair the ravages of the death-watch beetle in the hall, and the success of the appeal and of the subsequent restoration was largely due to Samman's energy and enthusiasm. As a City company the society is largely concerned with the dispensation of hospitality and charity, and these civic activities appealed strongly to Samman; he made an excellent host and shone most in convivial surroundings. Impetuous and outspoken, his actions and words did not meet with universal approval, but his love for the society was always apparent.

In 1893 Colonel Samman married Eugenie Galloway, by whom he had a son and a daughter, and in 1931 he married Louisa Pfander-Swinborne, who survives him.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By Medicus, M.P.

The Military Training Bill calling up "every male British subject ordinarily resident in Great Britain" is going swiftly on its way to third reading as I write. The Reserve and Auxiliary Forces Bill, providing a simple machinery, without proclamation, "to call out for service all or any of the members of" the reserve and auxiliary forces, is also nearing its final stage. Just to give a background foreign affairs are coming very much into the picture, with Russia, Central Europe, and Palestine like craggy and possibly volcanic mountains. And all in little over a week. So swiftly can Parliament move when the will to move exists.

* * *

The will to move is penetrating all the nooks and crannies of the army structure and not least interesting are the changes in army cookery which are being undertaken under the management of Major Sir Isidore Salmon, M.P. for Harrow. Sir Isidore is taking the old army-cook system—or lack of system—and standing it on its head. A school of cookery is in operation at Aldershot and a new school is being built, also at Aldershot. The course is designed to last nine months, but at present it only runs for three months because of lack of teachers and need for rapid expansion.

The first thing required for training army cooks was teachers—and they have not been easy to obtain. Then the teaching begins and from now on the output of cooks will, it is hoped, both increase and improve. Another development has been the appointment of five catering advisers to the five commands, men paid salaries rising to £900 a year. It will be the work of these advisers to advise upon and give general direction to the cooking of every unit and to see that every unit has properly trained cooks and suitable cooking apparatus to work with. The difficulty of getting the necessary apparatus has been one of the handicaps in getting the scheme rapidly in operation.

One interesting reform is that which will put all cooks, those for "other ranks" and those for N.C.O.'s and officers' messes, through the same school. What is indeed being established is a new cooking service in which the pay and status will be good and in which a man will not be liable to be removed from his duty because its importance is disregarded or misunderstood. The cook will become one of the best-paid ranks in the army. Even the ancient difficulty of the officers' and sergeants' messes being mysteriously supplied with the best cuts of meat and the best rations generally, while the men get the rest—even that is being tackled.

These changes will make it much easier to exercise medical control over feeding—as regards balance and adequacy of diet—and the R.A.M.C. are to be kept au courant with what is going on and given the opportunity for offering scientific advice. The reforms will not be fully in operation for about two years. It will not be possible, for about another twelve months, to extend the time of cookery training to nine months; and clearly the full effect of the reforms will not be felt until some time after that. But if an army really marches on its stomach it should march more comfortably now that this organ is to be cared for more efficiently. The nutrition of the soldier should in the future be at high standard. And the reflection of the knowledge of what good cooking means from the army centres of instruction should have a considerable influence in raising the cooking standards among the general population.

* * *

Medical examinations under the Military Training Bill—very shortly to become an Act—will soon be in operation. The regulations for determining the constitution of medical boards and their procedure will be made by the Minister of War. During the

debates on the bill it was emphasised by the spokesmen of the Government that it was not desired to rush the examinations. The bill as at present drafted, after its amendment in committee, provides specifically that the board may adjourn a medical examination if unable to complete it on one occasion; and further the board may direct the person examined to submit himself for examination by a consultant. It is intended that the boards shall consist of general practitioners and it was mentioned in the debates that the number of members would probably be five. It was also implied that the examination of any candidate would be very thorough and would be carried out by more than one member. It is unfortunate, however, that there has as yet been no clear understanding of the scope of the examination. Is it to be as complete as that for life-assurance purposes? And is use to be made of the old army form which leaves so many points vague? It would be of great benefit if on such matters as the condition of the nose, throat and ear, and a "rheumatic tendency" a clear-cut statement could be made. Such points cannot be embodied in any bill, but will be the subject of regulations.

All regulations are in theory and in some form or another capable of being brought under review by the House of Commons; but in fact they will not be so brought in so far as they concern medical matters unless the initiative comes from medical men. The medical committee in Parliament carries on quiet but persistent activities, but there is a large field in which medical opinion, if it is to be effective in Parliament, must come from outside, acting through one or other of the medical bodies such as the colleges, or through special contacts with the ministries. This question of standards and methods of medical examination of the new militiamen is one in which the profession outside the House can do almost more than the few medical members inside.

* * *

What will happen about the calling-up of medical students and those of the allied and auxiliary professions is not yet settled. The general rule is that there are to be no exemptions; so we must, for the moment, wait and see.

* * *

The proposed repeal of the tax on patent medicines announced by the Chancellor of the Exchequer is having interesting reactions. The tax itself was full of anomalies and its imposition could be escaped by patent-medicine vendors who chose to declare the prescription, but not under all circumstances. The tax was objected to by chemists and by stores who did not employ qualified chemists but who sold patent medicines just like any other goods.

Now that repeal of the tax has been decided by the Chancellor it is suddenly realised that it did at least give an incentive for the declaration of the contents of a medicine and that this incentive will be removed by the repeal. The fog of complete pharmaceutical obscurity will again fall on the market for proprietary preparations and there will be no check on what is being sold. It is being represented to the Chancellor that, if repeal is persisted in, the same legislation is required to make obligatory a statement of contents. It may also be argued that anomalous as the patent-medicine duty is it did at least give the beginning of control of a traffic in medicinal substances which is not a traffic which can be described as good in itself. The proprietary-medicine trade will presumably gain considerably by the remission in tax and already the shares of certain well-known preparations have "advanced sharply" as the B.B.C. stock-exchange bulletins sometimes phrase it. But it is unfortunate that a tax should be repealed which no-one was especially pressing to have repealed and without providing any check on contents of proprietary preparations or on standards of potency. Sometime the whole question of advertised medicines will have to be considered from the public-health point of view. The repeal of the tax makes that momentarily more difficult. And if Sir John Simon was thinking of adding to human happiness and well-being by the repeal of a tax he would have been a much more appreciated benefactor if he had abolished the tax on entertainments and probably done more to improve the public health.

In the House of Lords on May 22 the Military Training Bill and the Reserve and Auxiliary Forces Bill were read a second time.

QUESTION TIME

WEDNESDAY, MAY 17

Exporting of Boys

Mr. LEACH asked the Secretary of State for the Colonies if the buying and selling of Chinese children still persisted in Hong-Kong and Malaya; if his attention had been drawn to a statement of Mr. R. H. Oakeley, assistant protector of Chinese, Selangor, that it was no offence to sell a boy; and what steps he was taking to alter this.—Mr. MALCOLM MACDONALD replied: My attention has been drawn to a press report of the statement mentioned. The buying and selling of children with a view to slavery, prostitution or other immoral or unlawful purpose is forbidden by law in both Malaya and Hong-Kong. The recent Commission which investigated the problems of *mui tsai* in Hong-Kong and Malaya made searching inquiries as to the existence of any system of transfer affecting boys, but reported that no such system involving an element of bondage either on the pretext of adoption or on any other pretext could be found to exist. Recently there have been cases of boys sent to Malaya for the purpose, it is believed, of removing them from the zone of hostilities in China, and I have taken steps to assure myself that the authorities in Hong-Kong and Malaya are coöperating to maintain a strict watch against the development of abuses from such arrangements, and if circumstances should warrant specific legislation to control them it will be enacted.

Tuberculosis in Cyprus

Mr. PALING asked the Secretary of State for the Colonies what steps had been taken to deal with the high rate of tuberculosis prevalent in Cyprus.—Mr. MALCOLM MACDONALD replied: The Cyprus government have been active regarding this matter, and a recent expert survey shows that it would not be correct to suggest that the rate of tuberculosis in the island is abnormally high. It approximates in fact to the rate in this country. The Cyprus government have appointed a doctor as special tuberculosis officer. Tuberculosis clinics are established in two of the principal towns and a new sanatorium is being built with assistance from public subscription in Cyprus and a grant from the Colonial Development Fund.

Mr. PALING: Did not a recent report by a medical man describe the prevalence of tuberculosis there as a great scourge?—Mr. MACDONALD: The figures show that the rate is approximately the same as in this country.

Mr. BEN SMITH: Will the right hon. gentleman consider increasing the nutrition of these people and thus decrease the incidence of this disease?—Mr. MACDONALD: We are considering that.

THURSDAY, MAY 18

Public-health Administration in Wales

Mr. JENKINS asked the Minister of Health whether he had considered the terms of a resolution adopted at a meeting of the citizens of Newport, Monmouthshire,

presided over by the mayor, calling the attention of the Government to the low standard of public-health administration in certain areas in the principality, and asking that early action be taken to reform local government areas with a view to making them more efficient; and what action he proposed to take to give effect to the terms of the resolution.—Mr. ELLIOT replied: I have received a copy of this resolution. The matters raised in it will need to be reviewed as part of the full consideration of the report on the anti-tuberculosis service in Wales and Monmouth, on which I am in communication with the local authorities.

Pollution of Ullswater

Mr. T. E. HARVEY asked the Minister of Health whether his department would be represented at the conference which was being arranged by the directors of the Basinghall Mining Syndicate with the representatives of the Lakes urban council, the Friends of the Lake District, and others to consider the question of the pollution of Ullswater by the discharge of lead-mining effluent into the lake?—Mr. ELLIOT replied: No, Sir. The primary responsibility for the prevention of pollution rests with the local authorities under the Rivers Pollution Prevention Act, 1876, and in view of my judicial functions under that act I could not appropriately take any part in the matter at the present stage.

MONDAY, MAY 22

Peckham Health Centre

Dr. SUMMERSKILL asked the Parliamentary Secretary to the Board of Education whether he was aware that owing to financial difficulties the Pioneer Health Centre, Peckham, would be forced to close unless help was forthcoming; and would he take action accordingly.—Mr. KENNETH LINDSAY replied: The Board are fully aware of the valuable pioneer work done at this centre and of the difficulties it is at present encountering. My noble friend has recently considered whether there was any possibility of securing for it public financial support. The only means of doing this under the Education Act would be by way of a grant from the London County Council to the centre as a community centre. If the council were to incur expenditure for this purpose it would attract grant from the Board at the rate of 50 per cent.

Mental Deficients and Farm Work

Mr. THOMAS WILLIAMS asked the Minister of Health how many local authorities and voluntary institutions let out mental deficients under guardianship for work on farms; who was responsible for deciding the number of hours to be worked, and the wages paid; and whether these local authorities and institutions were made aware of the conditions of employment.—Mr. BERNAYS, parliamentary secretary to the Ministry of Health, replied: Arrangements for mental defectives to be sent out on licence to work on farms are made by the medical superintendent of the institution with the concurrence of two members of the committee of management. They are responsible for seeing that the conditions of employment are suitable, and it is their duty to keep themselves informed of the circumstances under which the defective is working. I am not in a position to state the number of institutions, whether provided by local authorities or voluntary bodies, which have made such arrangements.

Veterinary Service in Wales

Mr. HOPKIN asked the Minister of Agriculture if he would consider setting up a field station for veterinary service in Wales to work in conjunction with a suitable university.—Sir REGINALD DORMAN-SMITH replied: If the hon. member is referring to a field station for research and investigational work a station on a fixed site has not so far been found necessary in Wales. Full field facilities have readily been provided by Welsh farmers for the work of the two veterinary investigation officers for Wales, who are stationed at the University College of North Wales, Bangor, and at the University College of South Wales and Monmouthshire, Cardiff.

TUESDAY, MAY 23

Dust in Cardrooms

Mr. TOMLINSON asked the Home Secretary whether he was satisfied that the regulations at present in force for the elimination of dust in cardrooms were adequately complied with.—Mr. PEAKE replied: My right hon. friend would be glad to see substantial improvements in the prevention of dust in cotton mills, but the question is to a large extent one of what is practicable. The matter has been extensively discussed with the industry from time to time and some progress has been made; but my right hon. friend is not satisfied that more could not be done, and the chief inspector of factories proposes to hold a conference on the subject at Manchester at an early date.

Sale of Secret Remedies

Sir RALPH GLYN asked the Minister of Health whether he was satisfied that the proposal in the Finance Bill to repeal the tax on proprietary medicines was in the interest of the health of the nation; and what steps he proposed to take in order to exercise control of the sale of secret remedies, as, if the repeal be effected, there would be no incentive or necessity for makers to disclose the formulæ of such remedies, nor any restriction, other than that imposed by the Poisons and Pharmacy Act, upon their recommendation and sale by all and sundry.—Mr. BERNAYS replied: As regards the first part of the question my right hon. friend does not think that the repeal of the Medicine Stamp Duty should have any adverse effect on the health of the nation. As regards the second part, the question whether any further control should be imposed on the sale or advertisement of proprietary medicines is engaging my right hon. friend's attention but he cannot undertake to introduce legislation in the matter at the present time.

BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION

The annual meeting of this association was held on May 4, with the Marquess of Willingdon in the chair. In presenting his report Sir William Peel, chairman of the association, said that in the past year it had been possible materially to increase the number of workers in the field. There are, he said, still more than two million lepers in the British Empire and their care forms one of the liabilities which offset the asset side of our empire. The expenditure on medical services in the colonies has steadily increased for many years, but the resources are still not equal to the needs, and the various missions and societies that work on this field need help both in finance and in advice. The association gives grants to these missions and sends out workers to supplement their staff. The efforts of the association are mainly concentrated in Nigeria, but there has lately been considerable expansion in East Africa, largely as the result of Dr. Muir's visit last year.

In his address on the medical aspects of the association's work Sir John Megaw emphasised the value of the tours made by Dr. Muir, the medical secretary, in bringing inspiration to workers in isolated stations, and also of his work on the association's *Medical Review* and other publications. The outlook on leprosy has completely changed, he said, in the last twenty years; thanks chiefly to the work of Sir Leonard Rogers it need no longer be looked on as incurable. The discovery of an effective treatment has also helped to abolish the cruel system of compulsory segregation of lepers: many are now treated as outpatients in dispensaries; others are admitted to settlements and hospitals run on the same lines as those for tuberculosis. Lepers no longer conceal their disease for fear of imprisonment, but come for treatment at an early stage. The modern leprosy unit must cover not only the whole range of social and economic causes which make the existence and spread of leprosy possible but also those other diseases, such as malaria, hook-worm disease and dysentery, which lower the resistance of the body and render it an easy prey to the seeds of leprosy. The first step in the campaign against leprosy must be to provide effective treatment; the next is to attack the other prevalent diseases, the malnutrition and the hygienic conditions that prepare the soil for its propagation.

MEDICAL NEWS

University of Oxford

Applications are invited for a Horatio Symonds studentship in surgery. Candidates must be male graduates of the university. Further particulars will be found in our advertisement columns.

University of Cambridge

Dr. F. B. Parsons and Mr. P. H. R. Ghey have been appointed liaison officers between Addenbrooke's Hospital and the university.

Society of Apothecaries of London

The following candidates have satisfied the examiners for the Mastery of Midwifery :—

K. A. Evans, Miriam K. McAllum, H. M. Rees, and C. V. Salisbury.

London School of Hygiene and Tropical Medicine

The following awards have been made to members of the classes in tropical medicine and hygiene :—

Balfour studentships.—Dr. P. E. C. Manson-Bahr and Dr. C. McT. Hopkins.
Duncan medal.—Dr. L. M. Sanghvi.
Lalcaca medal.—Dr. A. C. E. Cole.

National University of Ireland

Prof. John Saunders has been appointed to represent the university at the conference of the National Association for the Prevention of Tuberculosis at Belfast in June. Prof. James O'Connor has been reappointed to represent the university on the Therapeutic Substances Advisory Committee for three years from Aug. 1.

National Society for the Prevention of Venereal Disease

At the twentieth annual meeting of this society, held in London on May 22, Lord Horder was elected president in succession to Sir Basil Peto, who has held office since 1926. The chairman of the society is Dr. R. A. Lyster, the treasurer Dr. A. Benjamin, and the hon. medical secretary Dr. Joan Malleson. The offices are at 4, Fitzroy Street, W.1.

Central London Throat, Nose and Ear Hospital

From June to November the postgraduate school of this hospital will hold a course in otorhinolaryngology which will include lectures and demonstrations on anatomy and physiology, pathology and bacteriology, radiology, endoscopy, and speech therapy. Further information may be had from the secretary of the school, Gray's Inn Road, W.C.1.

British Empire Cancer Campaign

The council of the campaign has instituted a Hailsham essay prize of £100. The first award will be made in 1940 for the best essay on one of the following : The influence of sepsis on the spread of cancer of the tongue and floor of mouth ; the treatment of carcinoma of the vulva ; hereditary factors in cancer. Candidates are limited to those directly responsible for collecting the material and filling in the case-sheets of the clinical cancer research committee of the campaign. Further particulars will be found in our advertisement columns.

International Union against Tuberculosis

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of the union six scholarships, each of 2000 liras, with board and lodging at the Carlo Forlanini Institute in Rome. The scholarships will preferably be awarded to young doctors already familiar with tuberculosis problems. Candidates in this country should send their applications through the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1, from whom further information may be had.

The union offers a biennial prize of a value of 2500 francs in memory of its founder, the late Prof. Leon Bernard. The prize will be awarded for the second time in 1940 to the author of an original essay in French or in English on conjugal tuberculosis. Further information may be had from the National Association for the Prevention of Tuberculosis.

Charing Cross Hospital

On Thursday, June 8, at 4 P.M., Lady Stamp will distribute the prizes to the students of this hospital. Lord Stamp will deliver an address.

National Hospital for Diseases of the Heart, London

The St. Cyres lecture for 1939 will be delivered at 5 P.M. on June 8 at 1, Wimpole Street, London, W.1, by Prof. W. T. Ritchie, president of the Royal College of Physicians of Edinburgh. He will speak on acute rheumatic carditis.

Family Planning Association

The National Birth Control Association has changed its name and will in future be known as the Family Planning Association. The association should still be addressed at 69, Eccleston Square, London, S.W.1.

Outpatient Time-table

King Edward's Hospital Fund for London has issued the May edition of the outpatient time-table at the London voluntary hospitals to doctors in the London area. Further copies may be had free from Messrs. George Barber and Sons, 23, Furnival Street, E.C.4.

University of London

Mr. W. E. Le Gros Clark, F.R.S., Dr. Lee's professor of anatomy in the University of Oxford, has been appointed to the university chair of anatomy at University College.

Prof. Le Gros Clark, who qualified in 1917, received his medical education at St. Thomas's Hospital, where after holding resident appointments he was appointed demonstrator in anatomy. He became F.R.C.S. in 1920 and spent the next three years in Sarawak as principal medical officer. In 1924 he was appointed reader in anatomy in the University of London and from 1927 to 1929 he held the university chair at St. Bartholomew's Hospital. After four years as professor of anatomy at St. Thomas's Hospital he was appointed in 1934 to the chair at Oxford. In the same year he published his book "Early Forerunners of Man," and the following year he was elected F.R.S.

Dr. Samuel Nevin has been appointed to the university chair of the pathology of mental disease at the Maudsley Hospital.

Dr. Nevin, who is 33 years of age, studied medicine at the Queen's University of Belfast where he won many prizes and medals. He graduated M.B. with first-class honours in 1927, and two years later he obtained his B.Sc. also with first-class honours. In 1930 he was awarded a gold medal for his M.D. thesis. After holding house-appointments he became demonstrator in physiology at the Queen's University in 1928. Two years later he came to London with a Mackay Wilson travelling scholarship to work at the London Hospital and the National Hospital, Queen Square. With a Halley Stewart research scholarship he continued his work in the clinical research unit of the latter hospital till 1935. In the following year he was appointed assistant physician and neuropathologist to the Maida Vale Hospital for Nervous Diseases. As part-time Pinsent-Darwin student he also undertook investigations in mental pathology at the Maida Vale Hospital and at the research unit, Royal Eastern Counties Institution, to which he was appointed consulting neurologist in 1938. In 1937 he became assistant neurologist to King's College Hospital and consulting neurologist to the transferred mental institutions of the London County Council. He has published papers on the chemistry of muscles and on muscular degeneration.

Mr. P. D. F. Murray, D.Sc., has been appointed to the university readership in biology at St. Bartholomew's Hospital medical college. He has held a Rockefeller travelling fellowship and a Smithson research fellowship of the Royal Society. Since 1937 he has held a teaching post in the department of zoology at Bedford College.

The title of professor emeritus of medicine in the university has been conferred on Dr. T. R. Elliott, F.R.S., on his retirement from the chair of medicine and the directorship of the medical unit at University College Hospital medical school.

The degree of D.Sc. has been conferred on Mr. F. G. Young, Ph.D., of the National Institute for Medical Research.

The special university lectures on human anatomy and morphology which Dr. A. Hrdlicka was prevented by illness from giving in April will be held at 5 P.M. on May 31 and June 1 at University College, Gower Street, W.C.1. Dr. Hrdlicka will speak on the present status of our views on human evolution and on the racial fallacies and realities of European people.

Royal Free Hospital

On Thursday, June 1, at 3 P.M., Mr. Hugh Lett, P.R.C.S., will present the prizes and certificates to the students of this hospital.

Disposal of the Dead

The eighth joint conference of burial and cremation authorities will be held at Portsmouth and Southsea from June 26 to 29. Lord Horder, who is president of the cremation section, will deliver an address. Dr. A. B. Williamson, medical officer of health for Portsmouth, will speak on the disposal of the dead after air-raids.

Proposed Mental Hospital at Anerley

To meet an urgent need for more accommodation for uncertified patients suffering from senile dementia, of the class now received at Tooting Bec Hospital, the L.C.C. proposes to build a new institution on part of the site of the former Anerley residential school. Accommodation will at first be limited to 340 patients, but with administrative buildings and staff quarters sufficient to allow for enlargement to provide for 612 patients. There will be two blocks for females, each taking 136 patients, and one for 68 male patients. The ten wards will each comprise one 24-bed dormitory, one 8-bed dormitory and two single rooms, and the staff accommodation will include a home for 62 nurses.

Dr. Barnardo's Homes

The annual general meeting of these homes was held on May 17, with Sir Malcolm Delevingne in the chair. Last year 1718 destitute children were admitted to the homes, and there were 8258 children in residence at the end of the year. This included 1384 babies under five, 379 sick, crippled or afflicted children, 1133 boys and girls under industrial and technical instruction, and about 450 lads in training for the Navy and Mercantile Marine. During 1938 1620 young people were placed out in life. The homes comprise 293 separate buildings and branches and include 2 model villages, 2 sea-training establishments, a technical school, 11 curative and convalescent homes, and 14 ever-open doors. There are also many smaller branches in various parts of the country and migration centres in Canada and Australia. The homes may be addressed at 18, Stepney Causeway, London, E.1.

Recent Medical Wills

Mr. C. H. Golding-Bird, who died on March 6, left £42,726 with net personalty £38,676. He left his house Pitfield at Meopham to Guy's Hospital. After the payment of various charitable bequests the Gravesend Hospital and Epsom College will each receive a third of the residue of his estate, which is subject to a life interest.

Sir Robert Johnstone, who died on Oct. 26, left personal estate in Great Britain and Northern Ireland valued at £40,654. Subject to certain bequests and life interests he directed that it should be divided in specified proportion between the Queen's University, the Royal Victoria Hospital, and the Royal Maternity Hospital, Belfast.

Hospital Librarians

At the fifth annual meeting of the British section of the International Guild of Hospital Librarians, held at Lambeth Palace on May 9, the Marquess of Hamilton, chairman, said that the hospital library service in London was now nearly complete, adding that it would be put to a formidable test next year when the international conference would bring many librarians from abroad. He lamented the shortage of librarians, mainly due no doubt to national service; but hospital librarianship was also of great importance and must continue. Mr. Harold Raymond said that hospital librarians were not only helping sick people to while away dreary hours but were giving many of them their first opportunity of appreciating the advantages of reading. Miss Blyde (sister-matron of King's College Hospital) told how greatly the library service was appreciated by patients and spoke of its value from the nurses' point of view. Hospital librarianship meant much more than merely giving out books. After the meeting, by kind consent of the Archbishop of Canterbury, members were shown over the library and other parts of the palace.

Westminster Hospital

On June 15 at 3 P.M. a service of thanksgiving for the past work of this hospital will be held at Westminster Abbey. The Rt. Rev. H. Hensley Henson, formerly Bishop of Durham, a life governor of the hospital, will preach the sermon. Applications for tickets may be made to the secretary of the hospital, Broad Sanctuary, S.W.1.

On May 23 Lord Wigram presided at the last quarterly meeting of the governors to be held in the board-room of the old hospital before the removal of patients and staff to the new buildings opened last month by the King. Mr. Bernard Docker, who presented the report of the building committee, said that the transfer of stores, equipment, records, and patients would begin on June 5, and on June 12 the full services of the hospital, including the private ward service, would be functioning in the new building. New hours for attendance at outpatient clinics had been circulated to all medical practitioners in the district served by the hospital and to all doctors in the habit of referring patients to Westminster Hospital. Votes of thanks were passed to Mr. Charles Power, the secretary of the hospital, to Mr. Docker for his outstanding personal effort in the collection of the final £100,000 of the appeal fund, and to Mr. Rock Carling, F.R.C.S., for his technical guidance and assistance.

Medical Insurance Agency

At the annual meeting held on May 17 at B.M.A. House, a sum of £2100 was voted as the first instalment of a fund for the education of orphan girls to bear the name of Squire Sprigge. The meeting approved recommendations of £2000 to the Royal Medical Benevolent Fund and of £500 to Epsom College; in each case the value of the grant will be enhanced by about 35 per cent. under covenant recognised by the revenue authorities. The ladies' guild of the R.M.B.F. was allotted £400, and the Sherman Bigg fund of Epsom College £300; two smaller donations amounting to £127 10*s.* were also authorised. This brings the total for charities to well over £6000. The following were elected to the hon. committee of management, the first four being re-elections, the others in place of Lady (Florence) Barrett and Dr. R. Langdon-Down (resigned) and Sir Robert Bolam (deceased): Sir Humphry Rolleston (chairman), Sir Ewen Maclean, Mr. Bishop Harman, Mr. H. S. Souttar, Dame Barrie Lambert, Dr. Robert Hutchison, and Prof. F. R. Fraser. Dame Barrie succeeds Dr. Langdon-Down as representative of the agency on the conjoint committee. The proceedings terminated with a vote of thanks to Sir Humphry who has served as chairman continuously since the agency was incorporated.

The Psychopathic Clinic

The clinic in Portman Street, W.1, run by the Institute for the Scientific Treatment of Delinquency, has now completed its fifth year of working and its annual report shows that 166 new patients were seen during 1938, compared with 167 in 1937. That there was no increase is ascribed to the fact that during the crisis in September and for some weeks afterwards very few cases were referred. Of the new cases 106 were drawn from the courts, 24 from medical practitioners and clinics, and 11 from relatives and friends; the remainder came from philanthropic societies, employers and so on or on their own initiative. Of the 247 cases under treatment or on the waiting-list 7 were discharged as cured, some fundamental cause of the delinquency having been discovered and removed, and 26 as improved, the patient having reached a stable non-delinquent state. It has been decided to set an arbitrary period of five years' freedom from delinquent acts as a criterion of cure in the improved group and a follow-up of old cases will now be attempted each year. About a third of the cases treated were diagnosed as psychoneurotic and another third as character cases, including sex perverts; about two-thirds were over and a third under 17 years of age; and half the cases were referred for theft and more than a quarter for sex offences. Cases for psychological treatment fall into two groups: those requiring intensive psychotherapy, involving from fifty to several hundred interviews; and those requiring short psychotherapy or simple psychiatric

handling and advice, involving from five to fifty interviews. Most cases are in the latter group, but in all cases treatment and observation may extend over a long period. The new Criminal Justice Bill is likely to lead to increased demands on the clinic but at the same time will facilitate its work both administratively and financially.

Conscription, Evacuation, and Casualties

In his presidential address to the annual congress of the Royal Institute of Public Health and Hygiene at Hastings on Tuesday Mr. Walter Elliot, the Minister of Health, described the calling-up of men of 20–21 for military service as an audit of the success or failure of the health services affecting the lives of the citizens up to that age. The infant-welfare services, the school medical inspection, the closing of the gap between school medical inspection and entry into health insurance, factory legislation, and all the housing and public-health acts of our time would be brought to a very sharp focus—namely, what is the health of John Smith at this crucial period in his early adult life, and what is the health of the 300,000 other John Smiths who came forward along with him? The emergency evacuation scheme also raised important public-health problems. Arrangements were being made for the movement of approximately three million people, without disturbing accommodation already reserved privately in the safer areas for another million. These plans were based upon a house-to-house survey in the course of which between five and six million houses had been visited by 100,000 visitors. Work was now being done on an extension of the plan arising from the revision of the distribution of evacuation and reception areas which he announced in Parliament last week. Further extensions beyond those announced were, be believed, impracticable. The other great emergency service—that which provided for the treatment of casualties—was also well advanced. There were in Great Britain in peacetime about 500,000 hospital places, including 150,000 in mental hospitals. It was estimated that 200,000 hospital beds could be made available for the treatment of casualties within the first twenty-four hours—beds for which staff already existed—and another 100,000 beds, for which there was at present no staff, could be provided within a week. In addition, a programme for the construction of new hutted annexes containing about 50,000 beds was now under way and it was hoped that these would afford additional facilities for hospital treatment in peace as well as in war. All this additional accommodation meant that there must be a great increase in the numbers of trained auxiliary nurses.

Births, Marriages and Deaths

BIRTHS

COOKE.—On May 16, in Boston, U.S.A., the wife of Dr. W. Trevor Cooke—a daughter.

DUNLOP.—On May 20, at Tangier, the wife of Dr. H. H. Dunlop—a daughter.

PAGAN.—On May 16, at Southampton, the wife of Dr. A. T. Pagan—a daughter.

PATERSON.—On May 21, at Portsmouth, the wife of Dr. Gerald PATERSON—a son.

PULVERTAFT.—On May 16, at St. Mary's Hospital, the wife of Dr. R. J. V. Pulvertaft—a son.

MARRIAGES

MARTYN—KELLY.—On May 18, Sir Henry Martyn, F.R.C.S., to Freda Kelly, M.R.C.S.

WOOD—ARBER.—On May 22, at Chelsea, Adrian R. Wood, M.B., of Andover, to Elizabeth Rapley Arber.

DEATHS

CAMPBELL.—On May 19, at Harrogate, Alexander Sydney Campbell, M.B. St. And.

CLARKSON.—On May 18, Ernest Robert Townley Clarkson, M.A. Camb., M.R.C.S., of Queen Anne Street, W.1, aged 69.

FAGGE.—On May 19, at Nuffield House, Guy's Hospital, Charles Herbert Fagge, M.S. Lond., F.R.C.S., aged 66.

PATERSON.—On May 23, at the Cardiff Royal Infirmary, Donald Rose Paterson, M.D. Edin., F.R.C.P., F.S.A., aged 76.

SAMMAN.—On May 17, at Ventnor, Isle of Wight, Lieut.-Colonel Charles Thomas Samman, M.R.C.S., R.A.M.C., aged 73.

WILLIAMS.—On May 18, at Erskine Hill, London, N.W.11, Ralph Paul Williams, M.D. Lond., M.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

May 29 to June 4

SOCIETIES

BIOCHEMICAL SOCIETY.
SATURDAY.—3 P.M. (institute of physiology, University of Glasgow), short communications and demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.
WEDNESDAY.—5 P.M. (University College, Gower Street, W.C.1), Dr. A. Hrdlicka (Washington): The Present Status of our Views on Human Evolution.
THURSDAY.—5 P.M., Dr. Hrdlicka: The Racial Fallacies and Realities of European Peoples.

TAVISTOCK CLINIC, Malet Place, W.C.1.
WEDNESDAY.—3 P.M., Dr. Cedric Shaw: Fatigue States. 4.30 P.M., Dr. H. Crichton-Miller: Alcoholism and Drug Addiction.
THURSDAY.—6 P.M., Dr. Alice Hutchison: Disorders of Childhood—Fears and Anxiety, Enuresis, and Night Terrors.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. D. M. Stone: The Bacteriological Diagnosis of Venereal Disease, (II) Gonorrhœa. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. A. A. Miles: The Isolation of Bacterial Antigens.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Dr. Elizabeth Hurdon: Radiation Therapy in Gynæcology—Malignant Conditions.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology).
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

ST. MARY'S HOSPITAL, W.2.
TUESDAY.—5 P.M. (institute of pathology and research), Mr. Joseph Needham, Sc.D., Genes, Organisers, and Pathology.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.
THURSDAY.—2 P.M., Mr. T. Twistington Higgins: Recognition and Treatment of Hydronephrosis. 3 P.M., Dr. Reginald Lightwood: Whooping-cough: Prevention, Treatment, and Complications.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.
MONDAY to SATURDAY.—ST. MARY'S HOSPITAL, Paddington, W.2, Tues. and Thurs, 8 P.M., clinical and pathological M.R.C.P. course.—BROMPTON HOSPITAL, S.W.3, Tues. and Fri., 5.15 P.M., M.R.C.P. course in chest diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
TUESDAY.—4 P.M., visit to Springfield Hospital, Tooting.

INSTITUTE FOR THE SCIENTIFIC TREATMENT OF DELINQUENCY, 8, Portman Street, W.1.
SATURDAY and SUNDAY.—Mr. Phineas Quass, LL.B., Dr. W. H. Gillespie, Dr. W. H. de B. Hubert, Dr. J. D. W. Pearce, Dr. Denis Carroll and Dr. C. L. Burns: Medical Aspects of Delinquency.

Appointments

BARBER, W. C., M.B. Camb., F.R.C.S., resident surgical officer at the East Suffolk and Ipswich Hospital.

COOK, L. C., M.D., D.P.M., medical superintendent at Bexley Hospital (L.C.C.).

ELPHINSTONE, J. H., M.R.C.S., second assistant medical officer at the Camberwell House Mental Hospital.

FLORENTIN, MIRIAM, M.B. Manc., D.P.H., assistant medical officer for Stoke Newington.

GILMOUR, WILLIAM, M.D. Glasg., D.P.H., medical officer of health for Hamilton.

KHANNA, V. N., M.B. Lucknow, D.O., D.O.M.S., house surgeon at the Birmingham and Midland Eye Hospital.

LAMB, H. D., L.M.S.S.A., L.M., assistant medical officer at the Southend Municipal Hospital.

LUCAS, S. H., M.R.C.S., D.P.M., second assistant medical officer at Leavesden Hospital (L.C.C.).

LYNCH, J. G., M.B. N.U.I., junior assistant medical officer at the Royal Earlswood Institution, Redhill.

MCKENZIE, WILLIAM, M.B. Camb., F.R.C.S., assistant surgeon to the Central London Throat, Nose, and Ear Hospital.

MAGEE, VINCENT, M.B. Belf., visiting pathologist and bacteriologist to the Warrington Infirmary.

PROWSE, C. B., M.B. Camb., M.R.C.P., hon. medical clinical assistant to the Royal Alexandra Hospital for Sick Children, Brighton.

RADCLIFFE, ANTHONY, M.B. Dubl., F.R.C.S., D.L.O., assistant surgeon to the Central London Throat, Nose, and Ear Hospital.

SMITH, A. ELLIOT, M.A. Camb., F.R.C.S., surgical registrar at the Royal Berkshire Hospital, Reading.

WATSON, A. J., M.B. Lond., F.R.C.S., orthopædic surgeon to the Coventry and Warwickshire Hospital.
WATTERSON, J. W., M.B. Edin., deputy medical officer of health for Morecambe.
*WEBSTER, R. C., M.D. N.U.I., D.P.H., medical officer of health for Darwen.
WHITE, J. GRAHAM, M.D. Ontario, resident surgical officer at the Birmingham and Midland Eye Hospital.

Westminster Hospital.—The following appointments are announced :—
HARDING, H. E., F.R.C.S., assistant orthopædic surgeon ;
SEARLE, W. N., M.B. N.Z., F.R.C.S., M.R.C.O.G., assistant obstetric surgeon ;
STEADMAN, B. ST. J., B.D.S. Lond., L.R.C.P., L.D.S., dental surgeon ;
ORGANE, GEOFFREY, M.B. Camb., D.A., anæsthetist ;
O'DOHERTY, COLMAN, M.B. N.U.I., D.P.H., D.M.R. & E., assistant physician to the radiological department ;
GAVEY, C. J., M.D. Lond., M.R.C.P., chief medical assistant and registrar ;
HARLAND, J. C., M.B. Lond., M.R.C.P., chief medical assistant and registrar ;
HART, F. DUDLEY, M.B. Edin., M.R.C.P., chief medical assistant and registrar ;
D'ABREU, F. A., Ch.M. Birm., F.R.C.S., chief surgical assistant and registrar ;
RUNDLE, F. F., M.B. Sydney, F.R.C.S., chief surgical assistant and registrar ;
ASHCROFT, D. WALKER, M.B. N.Z., F.R.C.S., D.L.O., chief assistant and registrar to the ear, nose, and throat department ;
HAMBLY, E., M.B. Lond., F.R.C.S., chief assistant and registrar to the orthopædic department ;
GRAHAM, JOHN, M.R.C.S., medical officer to the surgery and outpatient reception centre.
TOWNSEND, R. F., M.R.C.S., medical officer to the surgery and outpatient reception centre.
COX, ROBERT, M.B. Lond., F.R.C.S., medical officer to the surgery and outpatient reception centre.

Examining Surgeons under the Factories Act, 1937 : Dr. H. W. F. CROFT (Rufford District, Lancaster) ; Dr. S. MCCLEMENTS (Wellington District, Somerset) ; Dr. G. A. MACARTHUR (Oban District, Argyll) ; Dr. W. A. CLEMENTS (Daventry District, Northampton).

Vacancies

For further information refer to the advertisement columns

Antrim County Mental Hosp.—Res. med. supt., £900.
Aylesbury, Royal Buckinghamshire Hosp.—Second res. M.O., at rate of £150.
Bangor, Carnarvonshire and Anglesey Infirmary.—Sen. and jun. H.S.'s, £170 and £120 respectively.
Barnsley, Beckett Hosp. and Dispensary.—Jun. H.S., £150.
Barnstaple, North Devon Infirmary.—Sole res. M.O., at rate of £150.
Barrow-in-Furness County Borough, &c.—Obstetric officer, £1000.
Berkshire County Council.—Asst. M.O., £500.
Berkshire Education Committee.—Asst. school M.O., £500.
Birmingham Maternity Hosp.—Res. M.O. and registrar, £200.
Birmingham and Midland Hosp. for Women.—H.S., at rate of £100.
*Bolingbroke Hosp., Wandsworth Common, S.W.*11.—H.S. and cas. O., each at rate of £120.
Bristol University.—Lectureship in pathology, £400 to £500.
*British Postgraduate Medical School, Ducane Road, W.*12.—First asst. in dept. of surgery, £300.
Cambridge, Addenbrooke's Hosp.—Res. anæsthetist and emergency officer, at rate of £130.
Canterbury City and County.—M.O.H. and school M.O., £800.
*Central London Throat, Nose and Ear Hosp., Gray's Inn Road, W.C.*1.—Registrar, £150.
Chester City Hosp.—Jun. res. M.O., at rate of £150.
*Connaught Hosp., Walthamstow, E.*17.—H.P., H.S. and cas. O., each at rate of £110.
Cornwall County Council.—Deputy county M.O., £720.
Derby, Derbyshire Royal Infirmary.—H.S. for cas. dept., £150.
Doncaster Royal Infirmary.—H.S. to ear, nose and throat dept. and res. anæsthetist, at rate of £150.
Dorset County.—Asst. county M.O., £500.
*Dreadnought Hosp., Greenwich, S.E.*10.—H.P. and H.S., each at rate of £110.
East Lothian, East Fortune Sanatorium.—Jun. asst. M.O., at rate of £180.
*Elizabeth Garrett Anderson Hosp., Euston Road, N.W.*1.—Hon. asst. obstetrician.
Essex County Council.—Temp. tuberculosis officer, £12 per week.
Finchley Borough.—Asst. M.O.H., £500.
Folkestone, Royal Victoria Hosp.—Two H.S's., each £120.
*General Lying-in Hosp., York Road, Lambeth, S.E.*1.—Jun. res. M.O. and anæsthetist, at rate of £100.
*Guy's Hosp., S.E.*1.—Medical officer for dept. of V.D., £350.
Halifax General Hosp.—Jun. res. M.O., £250.
Halifax Royal Infirmary.—Cas. O., £150.
*Hosp. for Sick Children, Great Ormond Street, W.C.*1.—Two H.P.'s and H.S., each at rate of £50.
*Hosp. for Women, Soho Square, W.*1.—Two hon. anæsthetists.
Huddersfield Royal Infirmary.—H.S. to abnormal maternity dept., and two H.S.'s, each at rate of £150.

India, Assam Medical Research Society, Shillong.—Research officer, Rs. 1000/- per mensem.
Kidderminster and District General Hosp.—Sen. and jun. H.S.'s, at rate of £150 and £100 respectively.
*King's College Hosp., Denmark Hill, S.E.*5.—Asst. physician to children's dept.
Kingston County Hosp.—Res. asst. obstetrician, £350. Also res. asst. physician, £350.
Leeds, Meanwood Park Colony.—Med. supt., £800.
London County Council.—Res. med. supt. for St. James' Hosp., Balham, £1300.
*London Hosp., E.*1.—Clin. asst. in X-ray dept., £100.
London University.—Chair of pathology at St. Thomas's Hosp. Medical School, £1200.
Manchester, Ancoats Hosp.—Asst. M.O. for V.D. clinics, 1 guinea per attendance.
Manchester, Duchess of York Hosp. for Babies.—Sen. res. M.O., at rate of £125.
Manchester, Saint Mary's Hosps.—Res. anæsthetist, £100.
Manchester Hosp. for Consumption and Diseases of the Throat and Chest.—Asst. M.O. for Crossley Sanatorium, £200.
Manchester Royal Children's Hosp., Pendlebury.—Res. M.O., at rate of £150.
Manchester Royal Infirmary.—Chief asst. to surgical unit, £250.
Manchester and Salford Hosp. for Skin Diseases.—Two asst. M.O.'s, £150.
Manchester University.—Asst. director in dept. of clinical investigations and research at Manchester Royal Infirmary, £400.
Mansfield, Harlow Wood Orthopædic Hosp.—H.S., at rate of £200.
Middlesex County Council.—Various appointments, £650 a year to 3 guineas weekly.
Newcastle-upon-Tyne, Hosp. for Sick Children.—Hon. physician. Hon. surgeon. Two hon. asst. physicians. Also two hon. asst. surgeons.
Newport County Borough.—Asst. M.O.H., £500.
Nottingham City Education Committee.—Asst. school dentist, £450.
Nottingham General Hosp.—H.S. and res. anæsthetist, each at rate of £150.
Oldham County Borough.—Deputy M.O.H. and asst. tuber. officer, £750.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hosp.—H.S., at rate of £200.
Oxford, Radcliffe Infirmary.—Surg. reg., £400.
Oxford University.—Horatio Symonds studentship in surgery, £80.
Plymouth, Prince of Wales's Hosp., Greenbank Road.—Res. surg. O., at rate of £225.
Portsmouth, Saint Mary's Hosp.—Jun. asst. res. M.O., £250.
*Princess Elizabeth of York Hosp. for Children, Shadwell, E.*1.—Asst. physician. Also H.S. and cas. O., each at rate of £125.
*Queen Mary's Hosp. for the East End, Stratford, E.*15.—Radiologist, £350. Also registrar to ear, nose and throat dept., 50 guineas.
*Queen's Hosp. for Children, Hackney Road, E.*2.—Asst. surgeon.
Reading, Royal Berkshire Hosp.—Res. H.S., res. H.S. to special depts., and res. cas. O., each at rate of £150.
***Royal Air Force.*—Commissions.**
*Royal Eye Hosp., St. George's Circus, S.E.*1.—Refractionist to L.C.C. children's dept., £80.
*Royal Free Hosp., &c., W.C.*1.—Res. asst. pathologist, £150.
*Royal Masonic Hosp., Ravenscourt Park, W.*6.—Res. surg. O., at rate of £250.
***Royal Naval Medical Service.*—M.O.'s**
*Royal Northern Hosp., Holloway, N.*7.—Second physician for diseases of the skin.
*St. Bartholomew's Hosp. Medical College, E.C.*1.—Sen. demonstrator of physiology.
*St. Mark's Hosp. for Cancer, Fistula, &c., City Road, E.C.*1.—H.S., at rate of £120.
*St. Mary's Hosp., W.*2.—Hon. physician in charge of dept. for diseases of children.
*Saint Pancras Borough Council, N.W.*1.—Temp. asst. M.O., £500.
*St. Peter's Hosp. for Stone, &c., Henrietta Street, W.C.*2.—Clin. assts. to hon. staff.
*Salvation Army, Mothers' Hosp., Lower Clapton Road, E.*5.—Jun. res. M.O., at rate of £80.
*Samaritan Free Hosp. for Women, Marylebone Road, N.W.*1.—Pathologist, at rate of £250.
Sheffield, Jessop Hosp. for Women.—Registrar, £250. Sen. res. O. and res. M.O., each at rate of £150. Also H.S.'s, each at rate of £100.
Sheffield Royal Infirmary.—Two surgical first assts. and clin. asst., each £300. Also res. H.S., at rate of £80–£120.
Sheffield University.—Professor of bacteriology, £1000. Also asst. lecturer in pharmacology, £350.
Sittingbourne and Milton Urban District.—M.O.H., £800.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. to aural and ophth. depts., at rate of £150.
Swansea County Borough.—Asst. M.O., £500.
Tunbridge Wells, Kent and Sussex Hosp.—Res. surg. O., £250.
Wakefield, Scalebor Park Mental Hosp.—Asst. M.O., £400.
Warrington County Borough.—M.O. in charge at Borough General Hosp., £900.
West Bromwich, Hallam Hosp.—H.P., at rate of £200.
*West London Hosp., Hammersmith, W.*6.—Res. cas. O. and res. anæsthetist, each at rate of £100.
Westminster City.—Temporary asst. M.O.H., £600.
*Westminster Hosp., Broad Sanctuary, S.W.*1.—Hon. anæsthetic asst. and registrar. Also chief obstetric asst. and registrar, £250.
Winchester, Royal Hampshire County Hosp.—Res. surg. O. and H.P., at rate of £200 and £100 respectively.
Windsor, King Edward VII Hosp.—Pathologist, £500.
Wolverhampton Royal Hosp.—Two H.S.'s and H.P., each at rate of £100.
Worcester Royal Infirmary.—Cas. O., £140.
York County Hosp.—H.S. to eye, ear, nose and throat dept., £150.

*Subject to confirmation.

NOTES, COMMENTS, AND ABSTRACTS

A FURTHER STAGE IN AIR-CONDITIONING

THE ability to control the temperature of the atmosphere and to exclude soot and sound is looked on in this country as a luxury even after due allowance is made for its proved value in certain chronic pulmonary disorders. It is otherwise in the tropics where it is becoming increasingly evident that conditioned ventilation should not be regarded only as a privilege of the wealthy but as of real economic importance. It is not merely physiological caprice that enables the British miner to work under conditions that are little removed from tropical without ill effect while the West African administrator requires frequent periods of leave: the day's work of a miner is rounded with an equable sleep, but the tropical worker has no such nocturnal respite from a trying climate, and hence any device that gives him a chance of "sleeping cool" will profoundly affect his health and efficiency.

This problem has been approached scientifically by Dr. G. P. Crowden, of the London School of Hygiene and Tropical Medicine, assisted by Newcon Industries Ltd., and his work has resulted in the "Rektifair" air-conditioned cubicle for use in the tropics. It is a practical application of Crowden's original experiments on the conduction of heat and cold, in which he showed that bright metallic surfaces radiate little heat compared with black matt surfaces (see *Lancet*, 1934, **1**, 37). With this in mind he has constructed a cubicle containing a thin layer of aluminium felt within its walls. This has been found to reduce considerably the dry-bulb temperature of the air inside. It has, however, no influence on the degree of humidity, and a satisfactory lowering of the wet-bulb temperature is, if anything, more important than a fall in the dry-bulb reading. This difficulty is overcome by fitting a small air-conditioning plant to the cubicle for the purpose of controlling the humidity and the end-result is a "room within a room" having a comfortable temperature and suitable humidity and, presumably, proof to invasion from all forms of insect life. This apparatus has already been tried and found adequate. It is simple in design and a moderate-sized cubicle can easily be fitted up in an hour. The insulated cubicle itself does a good deal of the work and hence no elaborate air-conditioning plant, which would otherwise be required to deal effectively with a tropical environment, is necessary. This reduces initial expense and lowers running costs to about half a unit of electricity per hour. Moreover, no drastic lowering of temperature is desirable if tropical clothing is worn. The cubicles cost £68 to £100 and the air-conditioning unit £75, and the whole apparatus has the advantage of being portable.

A JEWISH SYMPOSIUM

THE group of Jewish doctors who planned a periodical to deal with Jewish medical history and contemporary problems, and launched it two years ago, have good reason for pride in their second number. "Medical Leaves" (Chicago: Medical Leaves Inc., pp. 196, 83) is a happy title, for the contributions are of the most varied character: historical and literary, scientific and political, and, as is natural, much that relates to the Jewish difficulties, social and medical, in Palestine. On the biographical side there is a charming account of the late Prof. Jacob Erdheim of Vienna by a former pupil, Dr. Aaron Arkin, whose enthusiastic eulogy of his master forms a worthy monument. Erdheim was essentially a happy man: successful and beloved in his chosen path, and fortunate in the date of his departure.

In his account of Maimonides, the outstanding genius of the Jewish race in the twelfth century, philosopher, learned scholar, and physician, Dr. Abraham Levinson, the editor-in-chief, reminds us that his teaching as regards health was so highly valued as to be incorporated among the religious precepts of his people, and were largely responsible for the fact that, when the entire medieval world fell a prey to terrible epidemic diseases, the Jews alone escaped. So noticeable was the immunity of the Jews that they were often accused of being responsible for the epidemics. In his thesis on the psycho-pathology of Nazism Dr. Hershel Meyer attempts to give a reasoned explanation of the underlying causes of the persecution of the Jewish race in Germany. He believes that the primary factor in the development of modern Fascism is purely economic in nature; but "the Nazi terror, its solemn glorification of murder, its lust for blood, cannot be resolved totally into terms of political economy; events in Nazi Germany definitely point toward a coexistent pathological state of mind, by which the Nazi brand of Fascism was greatly aided and abetted." This pathological state he proceeds to trace to its origins in history, and especially in the history of its Junker class, an aristocracy which has never succeeded in ridding itself of its medieval doctrine of the virtues of the mailed fist. He believes that a war is all but inevitable, unless Nazism should collapse economically; but even so "Germany will still need many years of thorough disinfection, many blasts of clean fresh air, many years of mental hygiene, until the virulence of its implanted psychosis will finally abate." Whether it carries conviction or not—and its effect is marred by some pardonable exaggerations—this is a notable contribution to an understanding of the Nazi mind. Other articles deal with the various aspects of medical life in Palestine, and the notable advances which are being made in the diagnosis and treatment of the endemic fevers and malarias of the Jewish settlements. They show that with straitened means but with admirable devotion the Jewish medical service is living up to the finest traditions of medicine, and bringing both to their own people and to their Arab neighbours new visions of the meaning and the blessings of health.

NUTRITION IN INDIA

A MEETING was held in London last week, under the auspices of the Committee Against Malnutrition, with Sir Cuthbert Sprawson in the chair, to discuss the nutritional state of the peoples of India.

Dr. Margaret Balfour pointed out that whereas the Englishman in times of scarcity can usually fall back on cheaper foods, such as bread and cheese and potatoes, the Indian can only reduce the amount he eats. The most urgent need of India, she thought, is attention to the requirements of pregnant and lactating women.

Sir John Megaw maintained that heredity plays a relatively small part in producing the poor physique of the peoples of India. From the researches of McCay, McCarrison and Aykroyd it is becoming clear that a deficient diet—deficient in quality even more than in quantity—is the chief cause of the poor physique of most Indian peasants and their proneness to disease. Eight years ago returns from 571 doctors in rural areas showed that 40 per cent. of the people under review were well nourished, 40 per cent. were poorly nourished and 20 per cent. very badly nourished. The diets were especially deficient in high-grade proteins, fats and vitamins. The problems of child marriage and of a rapidly increasing population must be examined when one is trying to analyse the causes of malnourishment in India. Sir John believed that England would be as depressed as India if girls of 14 were compelled to undertake the perils and responsibilities of childbearing. The people of India should not adopt our social customs wholesale—there is no need to rush from one extreme to another—but we cannot be wrong in trying to save them from a state in which they have neither

the strength to struggle for better conditions nor even an aspiration for a higher standard of existence. The remedy lies in education in the planning of life; the material foundations of the better life he visualised consist in scientific production, equitable distribution of the fruits of labour, and the regulation of reproduction. India is an invalid whose condition demands a diagnosis by skilled scientists, followed by rational treatment.

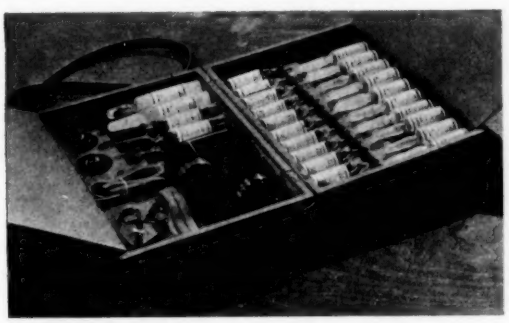
Dr. D. Curjel Wilson spoke of the work of the Indian National Nutritional Advisory Committee, which has been recently established. Indian women are in her opinion beginning to interest themselves strongly in nutrition.

Mr. N. Gangulee, Ph.D., formerly professor of agriculture at Calcutta, said his investigations have led him to conclude that in large areas of India there are only two rice bowls to every three mouths. And is the rice even in the two bowls nutritious? The highly polished rice in common use is the main cause of beriberi, and the state ought to control the rice-milling industry. As early as 1921 the Far Eastern Association of Tropical Medicine proposed the prohibition of milled rice; but few steps in this direction have yet been taken.

Among those contributing to the subsequent discussion were Sir Evelyn Howell, Prof. V. Subrahmanyan, Prof. J. R. Marrack, and Dr. G. G. Banerji. At the close of the meeting Mr. F. Le Gros Clark, secretary of the Committee Against Malnutrition, spoke of the work done in this country by unofficial and self-constituted bodies in bringing before the public the need for improved standards of nutrition. A similar part could be played in India by committees; and he trusted that the present meeting would show Indians that the British public is beginning to realise, however slightly, the need for common action.

ANÆSTHETIST'S EQUIPMENT IN WAR-TIME

Dr. RONALD JARMAN writes: With reference to my letter on anæsthesia in war-time in THE LANCET of April 8 (p. 845) the portable case shown in the figure here given has been prepared by Abbott Laboratories Ltd., of Wadsworth Road, Perivale, Middlesex. The case is made of ply-wood, covered with khaki cloth. It weighs 4 lb. 14 oz., measures 11 in. × 8 in. × 3 in., and costs 5–5½ guineas, depending on the fittings. The whole of the interior is lined with washable material and the two lids are padded also.



The grooves for the ampoules are lined so as to prevent movement and breakage. There are two 10 c.cm. syringes in metal containers full of spirit, each supplied with six intravenous needles, size 14 or 17. The case also contains two mouth-pieces, an airway, tongue forceps and a small tourniquet, and in the space under the large 1 gramme ampoules there is room for a 1 or 2 c.cm. syringe and emergency drugs. The case can be filled and opened rapidly, and can be thrown about with a reasonable amount of care without fear of breaking. It can either be slung round the shoulders, or two straps can be attached so that the anæsthetist can carry it on his back or front. It would also be possible to put the whole of the contents of the case in a box on a cartridge bandolier round the shoulders.

Since the case was designed it has been suggested that two small loops could be fitted on the front of the case to take a Sparklet J. CO_2 apparatus (CO_2 resuscitator), as supplied by A. Charles King Ltd., of 34, Devonshire Street, Harley Street, W.1. Space could also be provided for a container for tincture of iodine and for cotton-wool. These additions would make the case more useful in ordinary practice as well as in war.

TUBERCULOSIS IN FINLAND

THE death-rate from pulmonary tuberculosis in Finland is one of the highest in Europe, the figure for 1934 being 18·5 per 10,000 inhabitants, compared with 7·4 in England and only 4·6 in Denmark. In 1936 meat inspection of cattle in Finland revealed bovine tuberculosis in only 0·02 per cent. Tuberculin tests in cattle in the same year showed higher rates, definitely positive reactions being obtained in 0·71 per cent. and weak positive reactions in 1·72 per cent. The investigations undertaken by Stenius suggested that the conflicting evidence of meat inspection and tuberculin testing might in part be explained by his observation that cattle exposed to infection from open pulmonary tuberculosis in human beings may become tuberculin-positive without developing macroscopic changes detectable in the course of meat inspection. Hence Dr. J. Pikkarainen concludes (*Nord. Med.* Jan. 28, 1939, p. 224) that the positive tuberculin reactions found in Finnish herds do not depend on foci of tuberculosis in the cattle but on the manner in which they react to human infection. Since 1935 the Finnish government has systematically waged war on tuberculosis in cattle, and has succeeded in reducing the number of diseased animals to about 2000—i.e., only about 0·1 per cent. of all the cattle in Finland. It is the government's intention to pursue this policy till the disease has been completely stamped out in cattle. Meanwhile Pikkarainen has carried out type determinations of 140 samples of tubercle bacilli obtained from human cases of tuberculosis in different organs and at various ages. Although he used the latest technique in his determinations, he did not identify one sample as of bovine type.

DELIRIUM TREMENS

IN spite of the condition having been described by Thomas Sutton as long ago as 1813 Bowman, Wortis and Keiser (*J. Amer. med. Ass.* April, 1939, p. 1217) point out that little is still known about the ætiology of delirium tremens. Because cerebral œdema is often found post mortem recent therapies aim at dehydration when, in fact, generalised dehydration and toxicity are already present in these patients. The prodromal disgust for alcohol sometimes observed is often mistakenly regarded as a precipitating cause but Philip Piker has shown that the vast majority of patients develop delirium tremens while still drinking. Thus Bowman and his colleagues maintain that alcohol has no place either in prophylaxis or therapy and should be abruptly withdrawn. Similarly, mechanical restraints are best avoided as far as possible. Of sedatives they think paraldehyde is the best; morphia, because it masks symptoms and raises intracranial tension, the worst. Hydrotherapy, properly applied, has a definite value. The next step is to readjust the deranged metabolism. The brain feeds essentially on dextrose, and this should be abundantly available in the form of orange juice to which vitamin C has been added. This, especially if insulin is given with it, accelerates the elimination of alcohol. In delirium tremens the blood-chloride content is lowered, and 2-gramme capsules of sodium chloride should be given four-hourly to combat dehydration and acidosis. A soft diet containing 3000–4000 calories daily should be given and this should be rich in vitamins A, and

B_1 and C for their effect on the metabolism of nervous tissue in combating secondary infection. These American authors believe that in the absence of œdema cardiac failure or nephritis a high fluid intake—3000–4000 c.cm. daily—has a sedative effect and should be forced during the acute phase of the illness. Similarly, high enemas should be given not only to relieve constipation but also to increase the fluid intake. Failure to rule out concomitant syphilis, which was present in at least 10 per cent. of their cases, may have serious consequences, and for this reason diagnostic lumbar puncture is permissible. The common complications include head injuries, fractures, respiratory and focal infections, and finally vasomotor collapse, possibly due to toxic myocarditis and perhaps warranting the routine use of digitalis. The importance of individual psychotherapy during convalescence and after need not be stressed. Before adopting these methods of treatment Bowman and his colleagues had 16 deaths in a series of 92 cases. Since using them, of 65 patients only 3 have died. Although these numbers are too small to be in any way conclusive, a reduction in mortality of 12 per cent. cannot be ignored.

STERILE MARRIAGES

THE public undoubtedly needs education on the subject of sterility, for few people know how often involuntarily sterile marriages can be made fertile provided both husband and wife are willing to undergo thorough examination. Dr. Griffith's attempt[1] to explain the procedure and chances of success is not altogether satisfactory, though his book is certainly readable and may lead those anxious for children to seek expert advice. Dogmatic information is offered on some matters which are by no means settled and the notes on pathology are not all accurate. The hormonal aspects of sterility are perhaps overemphasised, but the diagnostic value of endometrial scrapings and B.M.R. estimations is not noted. Again, though the technique of tubal insufflation and lipiodol injection is described, tubal blockage is mentioned only in connexion with the gonococcus. The illustrations of the pelvis after lipiodol injections into the uterine cavity are good. The title of this book is ill-chosen. A family can hardly be said to exist until there are children.

THE LONDON AMBULANCE SERVICE

THE London County Council's ambulance service for accidents and sudden illness in streets and public places, though originally opposed by the House of Lords, the Home Office and the police, continues to render aid, in increasing numbers, to casualties within the county. With its 16 stations and 25 ambulances in commission under telephonic control from the County Hall it last year answered 56,318 calls to the site of the accident within (on an average) seven minutes. The frequency of the calls depends mainly on the numbers of persons using the streets at a given time; the largest hourly record is between noon and 1 o'clock, Saturdays being the days when the ambulances are most in demand and December the month with the highest total. It is natural that the stations centrally situated should receive the most requisitions; that in Bloomsbury registered no fewer than 6801 calls in 1938. The service is now so well recognised and relied upon by the public that the statistics show that, while last year 17,738 calls were received from the police, no fewer than 30,549 were made by the public. The proportionate number of cases taken to voluntary hospitals and to L.C.C. hospitals and institutions is significant; while 18,887 were received by the former 29,623 were taken to the latter. It is also worthy of note that removals within twenty-four hours either to the patients' homes or to "other institutions" were more numerous in the case of the voluntary hospitals than the municipal institutions. During the past year the emergency service organised by the King Edward's Hospital Fund has received valuable coöperation from the council's service. While it is accidents in the streets or other places for which the service is most frequently resorted to more than 10,000 cases of illness were dealt with last year, of which 1548 were epilepsy. During recent years the service has been made available for cases of parturition, if accompanied by a doctor, midwife or female friend. This has proved a great boon to women in labour for conveyance to hospital at times when ordinary transport is not available. Those who can recall the haphazard means of transport of street casualties to hospital before the county council put in operation the Metropolitan Ambulances Act of 1909 can realise the extent to which avoidable detriment to the sufferer has been obviated by this beneficent municipal service.

1. The Childless Family, its Cause and Cure. By Edward F. Griffith, M.R.C.S. London: Kegan Paul, Trench, Trübner and Co. 1939. Pp. 128. 3s. 6d.

A HOSPITAL IN CHINA CARRIES ON

WHEN Canton fell to Japanese troops in the middle of October Dr. Wong Man, dean of the Sun Yat Sen medical college of Lingnan University, had already left, according to plan, with a contingent of 140 doctors and nurses for the north, where he established three base hospitals. Dr. William Cadbury, professor of medicine in the university, remained behind as superintendent of Canton Hospital, for it was thought it would be easier for the hospital to carry on with a foreigner in charge. During the actual conquest of the city the hospital was closed, but on Oct. 31 as soon as the street fires had somewhat subsided it opened its doors and it has remained open ever since. Doctors, nurses, and patients soon found their way to it, and it became the rallying point for all who wanted to give or receive medical help. Lingnan University itself agreed to take in refugees and soon housed 7000 old men, women, and children. Food became scarce and famine threatened, but a relief ship arrived in time from Hong-Kong and help was also given by the American Red Cross and the British Fund for the Relief of Distress in China. Volunteer workers, some themselves refugees from Europe, came to help, and Canton Hospital is now staffed by men and women of five or six different nationalities. The urgency of the task of relief of suffering, Dr. Cadbury remarks, breaks all barriers of race and creed.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 13, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1001; diphtheria, 799; enteric fever 20 (26 "expected"); pneumonia (primary or influenzal), 768; puerperal pyrexia, 184; cerebro-spinal fever, 31; acute poliomyelitis, 5; acute polio-encephalitis, 2; encephalitis lethargica, 3; relapsing fever, 1 (Whitley U.D.); dysentery, 24; ophthalmia neonatorum, 119; No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 19 was 3151, which included: Scarlet fever, 696; diphtheria, 572 (carriers, 27); measles, 4; whooping-cough, 1040; puerperal fever, 24 mothers (plus 13 babies); encephalitis lethargica, 303; poliomyelitis, 3. At St. Margaret's Hospital there were 25 babies (plus 14 mothers with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 1 (1) from enteric fever, 4 (0) from measles, 2 (0) from scarlet fever, 23 (1) from whooping-cough, 18 (0) from diphtheria, 48 (9) from diarrhœa and enteritis under two years, and 45 (6) from influenza. The figures in parentheses are those for London itself.

Twickenham, Middlesbrough and Birmingham each reported 2 deaths from whooping-cough. Fatal cases of diphtheria were scattered over 11 great towns, Liverpool reporting 5, Birmingham 3, Middlesbrough 2. Birmingham had 5 deaths from diarrhœa, Leeds and Bristol each 4.

The number of stillbirths notified during the week was 261 (corresponding to a rate of 38 per 1000 total births), including 55 in London.